



STIC Search Report

EIC 1700

STIC Database Tracking Number: 131585

TO: Sharidan Carrillo
Location: REM6D21
Art Unit : 1746
September 2, 2004

Case Serial Number: 10/689402

From: Kathleen Fuller
Location: EIC 1700
REMSSEN 4B28
Phone: 571/272-2505
Kathleen.Fuller@uspto.gov

Search Notes



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- I am an examiner in Workgroup: Example: 1713
➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28



SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Shirley C. Gault Examiner #: 72492 Date: 9/8/94
Art Unit: 1/1/94 Phone Number 30 571-272400 Serial Number: 08/129402
Mail Box and Bldg/Room Location: Room 1037 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Process for Solving Surface Defects
Inventors (please provide full names): Posner, Chemical, Mechanical, Polishing, etc.

Earliest Priority Filing Date: See attachment 10/20/2003

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

This case needs a rush search.

*Searcher: [unclear]
Hand to [unclear] [unclear]
[unclear] [unclear] [unclear]*

On 6/5

- 1) (clean? or treat? or polish? or strip? or etch? or wash? or
grind? or (flush?) (adjo) (semiconductor or [unclear] or [unclear])
refers to workpiece or substrate or silicon) or integral or electronic
- 2) CMP or chemical mechanical polishing or
polish CMP or post-chemical mechanical polishing or
post-chemical mechanical planarization or chemical
mechanical planarization
- 3) (reduce roughness or reducing or reduced or diminish or
smoothing or prevent or inhibit or remove) adjo (defect)
(chip) (semiconductor or wafer or workpiece or
substrate or silicon) (surface or [unclear]) adjo (roughness or [unclear])

STAFF USE ONLY

Type of Search

Vendors and cost where applicable

Searcher: R. J. [unclear]

NA Sequence (#) 1

STN 1

Searcher Phone #

AA Sequence (#)

Dialog

Searcher Location:

Structure (#) 16

Questel/Orbit

Date Searcher Picked Up:

Bibliographic

Dr. Link

Date Completed: 9/9/04

Litigation

Lexis/Nexis

Searcher Prep & Review Time: 10

Fulltext

Sequence Systems

Clerical Prep Time:

Patent Family

WWW/Internet

Online Time: 120

Other

Other (specify)

=> file reg

FILE 'REGISTRY' ENTERED AT 17:14:06 ON 02 SEP 2004
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Property values tagged with IC are from the ZIC/VINITI data file
 provided by InfoChem.

STRUCTURE FILE UPDATES: 1 SEP 2004 HIGHEST RN 737690-81-2
 DICTIONARY FILE UPDATES: 1 SEP 2004 HIGHEST RN 737690-81-2

TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

Please note that search-term pricing does apply when
 conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
 information enter HELP PROP at an arrow prompt in the file or refer
 to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> file hcaplus

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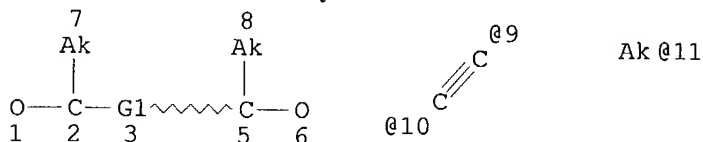
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FILE COVERS 1907 - 2 Sep 2004 VOL 141 ISS 10
 FILE LAST UPDATED: 1 Sep 2004 (20040901/ED)

This file contains CAS Registry Numbers for easy and accurate
 substance identification.

=> d que

L46 53 SEA FILE=REGISTRY ABB=ON SURFYNOL ?/CN
 L47 2 SEA FILE=REGISTRY ABB=ON DYNOL ?/CN
 L48 STR

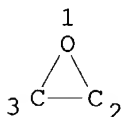


Covers I + ~~II~~ VI

VAR G1=11/10-2 9-5
 NODE ATTRIBUTES:
 CONNECT IS E2 RC AT 11
 DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED
 ECOUNT IS M3 C AT 7
 ECOUNT IS M3 C AT 8
 ECOUNT IS M1-X5 C AT 11

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE
 L49 STR 2



NODE ATTRIBUTES:
 DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
 RSPEC I
 NUMBER OF NODES IS 3

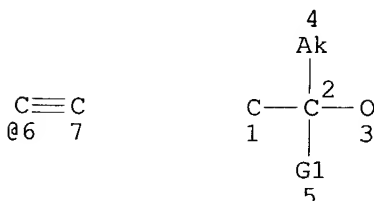
STEREO ATTRIBUTES: NONE
 L52 SCR 2043
 L55 STR 3

CH2-CH2-O
 1 2 3

NODE ATTRIBUTES:
 DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 3

STEREO ATTRIBUTES: NONE
 L57 SCR 971 OR 1150 OR 1076
 L59 91 SEA FILE=REGISTRY SSS FUL L48 AND (L49 OR L55) AND L52 AND
 L57
 L60 STR



VAR G1=H/6

*91 polymers from
 1 and (2 or 3)*

*query for it
 10,836 polymers*

NODE ATTRIBUTES:
 DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED
 ECOUNT IS M3 C AT 4

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE
 L62 SCR 1149 OR 1076
 L64 10836 SEA FILE=REGISTRY SSS FUL L60 AND (L49 OR L55) AND L52 AND L62
 L65 STR

Ak—N—Ak—N—Ak
 1 2 3 4 5

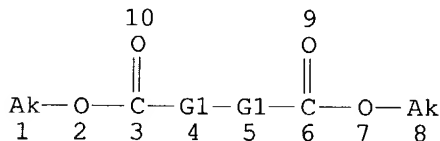
Covers structures III, IV, VII

NODE ATTRIBUTES:
 DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

31,368 compounds

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE
 L66 SCR 1838
 L68 SCR 2021 OR 2026
 L70 SCR 2016
 L72 31368 SEA FILE=REGISTRY SSS FUL L65 NOT (L66 OR L68 OR L70)
 L79 STR



Covers IV

321 structures

CH—OH
 @13 14

VAR G1=CH2/13
 NODE ATTRIBUTES:
 CONNECT IS E1 RC AT 1
 CONNECT IS E1 RC AT 8
 DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED
 ECOUNT IS M3 C AT 1
 ECOUNT IS M3 C AT 8

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 12

STEREO ATTRIBUTES: NONE

L82 321 SEA FILE=REGISTRY SSS FUL L79 NOT L66
 L83 2003 SEA FILE=HCAPLUS ABB=ON L46 OR SURFYNOL
 L84 47 SEA FILE=HCAPLUS ABB=ON L47 OR DYNOL
 L85 999 SEA FILE=HCAPLUS ABB=ON L59
 L86 8893 SEA FILE=HCAPLUS ABB=ON L64
 L87 93600 SEA FILE=HCAPLUS ABB=ON L72
 L88 1584 SEA FILE=HCAPLUS ABB=ON L82
 L89 674 SEA FILE=HCAPLUS ABB=ON (L83 OR L84 OR L85 OR L86 OR L87 OR
 L88) AND SEMICONDUCT?
 L102 18 SEA FILE=HCAPLUS ABB=ON L89 AND PLANARI?
 L103 597 SEA FILE=HCAPLUS ABB=ON L87 AND SEMICONDUCT?
 L104 71 SEA FILE=HCAPLUS ABB=ON L103 AND (SURFACT? OR SURFAC?(2A)ACTIV
 ?)
 L105 21 SEA FILE=HCAPLUS ABB=ON L104 AND (CMP OR CHEM?(2A)MECH? OR
 PLANARI? OR DEFECT?(3A)(REDUC? OR PREVENT? OR REMOV? OR
 INHIBIT?))
 L106 64 SEA FILE=HCAPLUS ABB=ON L86 AND SEMICONDUCT?
 L107 8 SEA FILE=HCAPLUS ABB=ON L106 AND (CMP OR CHEM?(2A)MECH? OR
 PLANARI? OR DEFECT?(3A)(REDUC? OR PREVENT? OR REMOV? OR
 INHIBIT?))
 L109 3656 SEA FILE=HCAPLUS ABB=ON (L83 OR L84 OR L85 OR L88)
 L110 46 SEA FILE=HCAPLUS ABB=ON L109 AND SEMICONDUCT?
 L111 9 SEA FILE=HCAPLUS ABB=ON L110 AND (CMP OR CHEM?(2A)MECH? OR
 PLANARI? OR DEFECT?(3A)(REDUC? OR PREVENT? OR REMOV? OR
 INHIBIT?))
 L112 28 SEA FILE=HCAPLUS ABB=ON L110 AND (SURFACT? OR SURFAC?(2A)ACTIV
 ?)
 L113 22 SEA FILE=HCAPLUS ABB=ON L110 AND (RINS? OR WASH? OR FLUSH? OR
 CLEAN? OR TREAT?)
 L114 69 SEA FILE=HCAPLUS ABB=ON L102 OR L105 OR L107 OR (L111 OR L112
 OR L113)

=> d l114 bib abs ind hitstr 1-69

L114 ANSWER 1 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2004:609574 HCAPLUS
 DN 141:149433
 TI Processing of **semiconductor** components with dense processing
 fluids and ultrasonic energy
 IN Mcdermott, Wayne Thomas; Subawalla, Hoshang; Johnson, Andrew David;
 Schwarz, Alexander
 PA USA
 SO U.S. Pat. Appl. Publ., 25 pp., Cont.-in-part of U.S. Ser. No. 253,054.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	US 2004144399	A1	20040729	US 2003-737458	20031216
	US 2004055621	A1	20040325	US 2002-253054	20020924
PRAI	US 2002-253054	A2	20020924		

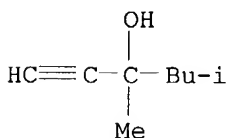
AB This invention describes a method for processing an article with a dense
 processing fluid in a processing chamber while applying ultrasonic energy
 during processing. The dense fluid may be generated in a sep.
 pressurization vessel and transferred to the processing chamber, or
 alternatively may be generated directly in the processing chamber. A
 processing agent may be added to the pressurization vessel, to the

processing chamber, or to the dense fluid during transfer from the pressurization vessel to the processing chamber. The ultrasonic energy may be generated continuously at a constant frequency or at variable frequencies. Alternatively, the ultrasonic energy may be generated intermittently.

- IC ICM B08B007-00
ICS B08B007-02
- NCL 134001000; 134001300; 134034000; 134035000; 134037000; 134198000;
134011000
- CC 76-3 (Electric Phenomena)
- ST **semiconductor** processing dense fluid ultrasonic energy
- IT Ketones, uses
RL: NUU (Other use, unclassified); USES (Uses)
(1,3-diketones, processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Hydrocarbons, uses
RL: NUU (Other use, unclassified); USES (Uses)
(C2-6, dense fluid; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Glycols, uses
RL: NUU (Other use, unclassified); USES (Uses)
(acetylenic, processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Esters, uses
RL: NUU (Other use, unclassified); USES (Uses)
(aliphatic, dialkyl, processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Alcohols, uses
RL: NUU (Other use, unclassified); USES (Uses)
(amino, processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Coating materials
(antistaining, processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Amines, uses
RL: NUU (Other use, unclassified); USES (Uses)
(diamines, tertiary, processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Glycols, uses
RL: NUU (Other use, unclassified); USES (Uses)
(esters, processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Hydrocarbons, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fluoro, dense fluid; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Ketones, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fluoro, processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Ethers, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fluoroalkyl, dense fluid; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Alkanes, uses
Alkenes, uses
RL: NUU (Other use, unclassified); USES (Uses)

- (halo, processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Imine
 RL: NUU (Other use, unclassified); USES (Uses)
 (ketimines, processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Perfluoro compounds
 RL: NUU (Other use, unclassified); USES (Uses)
 (nitriles, dense fluid; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Nitriles, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (perfluoro, dense fluid; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Hydrocarbons, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (perhalocarbons, perfluoro, dense fluid; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Electric insulators
 Photoresists
 (processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Alcohols, uses
 Alkanes, uses
 Amides, uses
 Carbonates, uses
 Carboxylic acids, uses
 Esters, uses
 Ethers, uses
 Flavonols
 Glycols, uses
 Ketones, uses
 Nitriles, uses
 Organometallic compounds
 Oximes
 Peroxides, uses
 Silanes
 RL: NUU (Other use, unclassified); USES (Uses)
 (processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT **Cleaning**
 Sound and Ultrasound
 (processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT **Semiconductor** device fabrication
 (processing of **semiconductor** components with dense processing fluids and ultrasonic energy for)
- IT Amines, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (tertiary, processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT Amines, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (triamines, tertiary, processing agents; processing of **semiconductor** components with dense processing fluids and ultrasonic energy)
- IT 115-25-3, Octafluorocyclobutane 116-15-4, Hexafluoropropylene 685-63-2
 7647-01-0, Hydrogen chloride, uses 7664-39-3, Hydrogen fluoride, uses

- 7783-54-2, Nitrogen trifluoride 63938-10-3, Tetrafluorochloroethane
 RL: NUU (Other use, unclassified); USES (Uses)
 (dense fluid and processing agents; processing of **semiconductor**
 components with dense processing fluids and ultrasonic energy)
- IT 74-82-8, Methane, uses 75-10-5, Difluoromethane 75-46-7,
 Trifluoromethane 75-73-0, Tetrafluoromethane 76-16-4, Hexafluoroethane
 76-19-7, Perfluoropropane 124-38-9, Carbon dioxide, uses 354-33-6,
 Pentafluoroethane 593-53-3, Monofluoromethane 1333-74-0, Hydrogen,
 uses 2551-62-4, Sulfur hexafluoride 7440-37-1, Argon, uses
 7440-59-7, Helium, uses 7446-11-9, Sulfur trioxide, uses 7664-41-7,
 Ammonia, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses
 10024-97-2, Nitrous oxide, uses 10028-15-6, Ozone, uses 27987-06-0,
 Trifluoroethane 29759-38-4, Tetrafluoroethane 37145-47-4,
 Pentafluoropropane
 RL: NUU (Other use, unclassified); USES (Uses)
 (dense fluid; processing of **semiconductor** components with
 dense processing fluids and ultrasonic energy)
- IT 57-13-6, Urea, uses 60-00-4D, Ethylenediamine tetraacetic acid, derivs.
 62-49-7D, Choline, derivs. **107-54-0, Surfynol 61**
 108-32-7, Propylene carbonate 335-01-3, Perfluoromethylamine 353-50-4,
 Carbonyl fluoride 359-40-0, Oxalyl fluoride 373-91-1,
 Fluoroxytrifluoromethane 407-25-0, Trifluoroacetic anhydride
 594-07-0D, Carbamodithioic acid, derivs. 675-14-9, Cyanuric fluoride
 7732-18-5, Water, uses 7789-25-5, Nitrosyl fluoride 7790-91-2,
 Chlorine trifluoride 16282-67-0
 RL: NUU (Other use, unclassified); USES (Uses)
 (processing agents; processing of **semiconductor** components
 with dense processing fluids and ultrasonic energy)
- IT 7440-21-3, Silicon, processes
 RL: PEP (Physical, engineering or chemical process); PYP (Physical
 process); TEM (Technical or engineered material use); PROC (Process); USES
 (Uses)
 (processing of **semiconductor** components with dense processing
 fluids and ultrasonic energy)
- IT **107-54-0, Surfynol 61**
 RL: NUU (Other use, unclassified); USES (Uses)
 (processing agents; processing of **semiconductor** components
 with dense processing fluids and ultrasonic energy)
- RN 107-54-0 HCAPLUS
- CN 1-Hexyn-3-ol, 3,5-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L114 ANSWER 2 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:570184 HCAPLUS

DN 141:131290

TI Photoresist removal

IN Minsek, David W.; Murphy, Melissa K.; Bernhard, David D.; Baum, Thomas H.

PA Advanced Technology Materials, Inc., USA

SO PCT Int. Appl.; 20 pp.

CODEN: PIXXD2

DT Patent

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

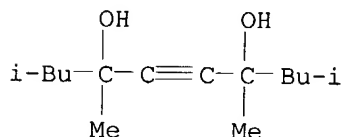
LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004059700	A2	20040715	WO 2003-US40439	20031217
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI	US 2002-434971P	P	20021220		
	US 2003-389214	A	20030314		
AB	Disclosed herein is a composition and method for semiconductor processing. In one embodiment, a wet- cleaning composition for removal of photoresist is provided. The composition comprises a strong base; an oxidant; and a polar solvent. In another embodiment, a method for removing photoresist is provided. The method comprises the steps of applying a wet- cleaning composition comprising about 0.1-30 % strong base; about 1-30 % oxidant; about 20-95 % polar solvent; and removing the photoresist.				
IC	ICM H01L				
CC	74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)				
ST	photoresist removal semiconductor device fabrication				
IT	Semiconductor device fabrication (photoresist removal for)				
IT	Cleaning Coating removers Photoresists (photoresist removal for semiconductor device fabrication)				
IT	Oxidizing agents (photoresist removal for semiconductor device fabrication containing)				
IT	542-02-9, 2,4-Diamino-6-methyl-1,3,5-triazine 2349-67-9, 5-Amino-1,3,4-thiadiazole-2-thiol RL: TEM (Technical or engineered material use); USES (Uses) (chelator; photoresist removal for semiconductor device fabrication containing)				
IT	583-39-1, 2-Mercaptobenzimidazole RL: TEM (Technical or engineered material use); USES (Uses) (inhibitor; photoresist removal for semiconductor device fabrication containing)				
IT	75-59-2, Tetramethyl ammonium hydroxide 112-34-5, Butyl carbitol 123-00-2, N-(3-Aminopropyl)-morpholine 126-86-3, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol 622-40-2, N-2- Hydroxyethylmorpholine 1704-62-7, N,N-Dimethyldiglycolamine 3030-47-5, Pentamethyldiethylenetriamine 7529-22-8, N-Methylmorpholine-N-oxide 10043-35-3, Boric acid, uses 343271-07-8 RL: TEM (Technical or engineered material use); USES (Uses) (photoresist removal for semiconductor device fabrication containing)				
IT	26027-38-3 RL: TEM (Technical or engineered material use); USES (Uses)				

(**surfactant**; photoresist removal for **semiconductor** device fabrication containing)

IT **126-86-3**, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol
 RL: TEM (Technical or engineered material use); USES (Uses)
 (photoresist removal for **semiconductor** device fabrication containing)
 RN 126-86-3 HCAPLUS
 CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L114 ANSWER 3 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:507654 HCAPLUS

DN 141:80530

TI Manufacture of solder alloys, ink compositions containing solder alloys, and bump contacts in electronic devices and method for their formation

IN Arita, Hitoshi; Kojima, Akio

PA Ricoh Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 56 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004174538	A2	20040624	JP 2002-342329	20021126
	US 2004129344	A1	20040708	US 2003-701061	20031104
PRAI	JP 2002-322678	A	20021106		
	JP 2002-340384	A	20021125		
	JP 2002-342329	A	20021126		
AB	Solder alloys are manufactured by their dissoln. in supercrit. or sub-critical fluids followed by their crystallization Ink-jetting ink compns. containing the solder alloys, organic solvents, and wetting agents are also claimed. Preferably, the ink compns. also contain dispersants, polyols, glycol ethers, and surfactants . An external electrode pad of a semiconductor device is treated by formation of an intermediate metal layer, ink-jet printing of a solder alloy layer, and formation of a flux layer and then heat melted for formation of bumps. Thus formed bumps are also claimed as well. Bump contacts free of voids and cracks can be formed.				
IC	ICM B23K035-363				
	ICS C09D011-00; H01L021-60				
CC	76-2 (Electric Phenomena) Section cross-reference(s): 42, 56, 74				
ST	solder alloy supercrit fluid dissoln crystn; subcrit fluid dissoln crystn solder alloy; bump contact formation solder alloy ink compn; ink jetting ink solder alloy compn				
IT	Solders (alloys; crystallization of solder alloys after dissoln. in super- or sub-critical				

fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT **Surfactants**
 (anionic, ink compns. containing; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT Bump contacts
 Crystallization
 Ink-jet printing
 Supercritical fluids
 Wetting agents
 (crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT Glycols, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (ethers, ink compns. containing; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT Ethers, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (glycol, ink compns. containing; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT **Surfactants**
 (ink compns. containing; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT Polyoxyalkylenes, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (ink solvent; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT Inks
 (jet-printing; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT Polyoxyalkylenes, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (monoalkyl(phenyl) ethers, **surfactants**, in ink compns.; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT Alcohols, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (polyhydric, ink compns. containing; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT Alcohols, uses

Ketones, uses

RL: NUU (Other use, unclassified); USES (Uses)

(super- or sub-critical fluid; crystallization of solder alloys after dissoln. in

super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT Polyoxyalkylenes, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(**surfactants**, ink compns. containing; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet

ink compns. used for formation of bump contacts in electronic devices)

IT 513-85-9, 2,3-Butanediol

RL: TEM (Technical or engineered material use); USES (Uses)

(ink solvent, ink wetting agent; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT 57-55-6, Propylene glycol, uses 80-73-9, 1,3-Dimethyl-2-imidazolidinone 106-69-4, 1,2,6-Hexanetriol 107-21-1, Ethylene glycol, uses 107-41-5, 2-Methyl-2,4-pentanediol 107-88-0, 1,3-Butanediol 110-63-4, 1,4-Butanediol, uses 111-29-5, 1,5-Pentanediol 111-46-6, Diethylene glycol, uses 111-48-8, Thiodiglycol 112-27-6, Triethylene glycol 112-60-7, Tetraethylene glycol 616-45-5, 2-Pyrrolidone 629-11-8, 1,6-Hexanediol 872-50-4, N-Methyl-2-pyrrolidone, uses 3068-00-6, 1,2,4-Butanetriol 3445-11-2 24800-44-0, Tripropylene glycol 25265-71-8, Dipropylene glycol 25322-68-3, Poly(ethylene glycol)

RL: TEM (Technical or engineered material use); USES (Uses)

(ink solvent; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for

formation of bump contacts in electronic devices)

IT 56-81-5, Glycerin, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(ink-jetting ink solvent; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used

for formation of bump contacts in electronic devices)

IT 7440-22-4, Silver, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-74-6, Indium, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(solder; crystallization of solder alloys after dissoln. in super- or

sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT 62-53-3, Aniline, uses 64-17-5, Ethanol, uses 67-56-1, Methanol, uses 67-63-0, 2-Propanol, uses 67-64-1, Acetone, uses 71-23-8, 1-Propanol, uses 71-43-2, Benzene, uses 78-93-3, Methyl ethyl ketone, uses 93-58-3, Methyl benzoate 95-47-6, o-Xylene, uses 95-48-7, o-Cresol, uses 95-50-1, o-Dichlorobenzene 98-82-8, Isopropylbenzene 98-86-2, Acetophenone, uses 98-95-3, Nitrobenzene, uses 100-41-4, Ethylbenzene, uses 100-47-0, Benzotrile, uses 100-51-6, Benzyl alcohol, uses 100-66-3, Anisole, uses 106-42-3, p-Xylene, uses 106-44-5, p-Cresol, uses 106-46-7, p-Dichlorobenzene 108-38-3, m-Xylene, uses 108-39-4, m-Cresol, uses 108-67-8, 1,3,5-Trimethylbenzene, uses 108-88-3, Toluene, uses 108-90-7, Chlorobenzene, uses 108-95-2, Phenol, uses 541-73-1, m-Dichlorobenzene

RL: NUU (Other use, unclassified); USES (Uses)

(super- or sub-critical fluid; crystallization of solder alloys after dissoln. in

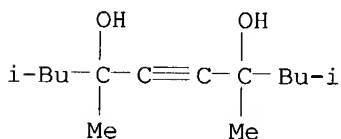
super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT 126-86-3 9014-85-1 104582-53-8 105365-63-7
 127174-97-4, 3,6,9,12-Tetraoxapentacosanoic acid 131890-11-4
 162215-93-2 201986-48-3, 3,6,9,12,15-Pentaoxaoctacosanoic acid
 709664-81-3
 RL: TEM (Technical or engineered material use); USES (Uses)
 (surfactant in ink composition; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

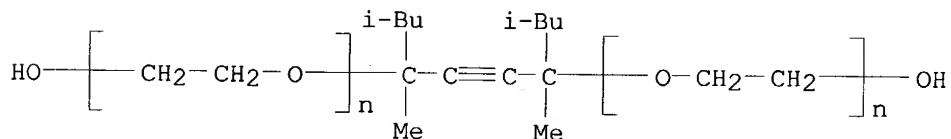
IT 9010-79-1, Ethylene-propylene copolymer 16005-17-7D, Acetylene glycol, derivs. 25322-68-3D, Polyethylene glycol, monoalkyl(phenyl) ethers
 RL: TEM (Technical or engineered material use); USES (Uses)
 (surfactants, in ink compns.; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

IT 126-86-3 9014-85-1
 RL: TEM (Technical or engineered material use); USES (Uses)
 (surfactant in ink composition; crystallization of solder alloys after dissoln. in super- or sub-critical fluids for preparation of ink-jet ink compns. used for formation of bump contacts in electronic devices)

RN 126-86-3 HCAPLUS
 CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 9014-85-1 HCAPLUS
 CN Poly(oxy-1,2-ethanediyl), α,α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



L114 ANSWER 4 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2004:472975 HCAPLUS
 DN 141:45814
 TI Passivative **chemical-mechanical** polishing slurry for copper film **planarization** on **semiconductor** substrates
 IN Liu, Jun; Wrschka, Peter; Bernhard, David; King, Mackenzie; Darsillo, Michael; Boggs, Karl
 PA USA
 SO U.S. Pat. Appl. Publ., 10 pp.
 CODEN: USXXCO
 DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004108302	A1	20040610	US 2002-315641	20021210
	WO 2004053008	A2	20040624	WO 2003-US38047	20031202
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI	US 2002-315641	A	20021210		

AB The present invention relates to a **chemical mech.** polishing composition and to a method of using same for the polishing of **semiconductor** substrates having copper thereon, e.g., copper interconnects, electrodes, or metalization, as part of a **semiconductor** device structure on a wafer substrate. The **chemical-mech.** polishing (**CMP**) composition contains 5-aminotetrazole, e.g., in combination with oxidizing agent, chelating agent, abrasive and solvent. Such **CMP** composition advantageously is devoid of BTA, and is useful for polishing surfaces of Cu elements on **semiconductor** substrates, without the occurrence of dishing or other adverse **planarization** deficiencies in the polished Cu, even in the presence of substantial levels of Cu ions, e.g., Cu²⁺, in the bulk **CMP** composition at the Cu/**CMP** composition interface during **CMP** processing.

IC ICM C23F001-00

NCL 216083000

CC 76-2 (Electric Phenomena)

ST **chem mech** polishing slurry copper

IT Slurries

(**chemical mech.** polishing; passivative **chem**
-mech. polishing slurry for copper film
planarization on **semiconductor** substrates)

IT Polishing

(**chemical-mech.**; passivative **chemical-**
mech. polishing slurry for copper film **planarization**
on **semiconductor** substrates)

IT Chromates

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(dichromates, polishing slurry oxidizing agent; passivative
chemical-mech. polishing slurry for copper film
planarization on **semiconductor** substrates)

IT Hypohalites

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(hypobromites, polishing slurry oxidizing agent; passivative
chemical-mech. polishing slurry for copper film
planarization on **semiconductor** substrates)

IT Hypohalites

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

- (hypoiodites, polishing slurry oxidizing agent; passivative
chemical-mech. polishing slurry for copper film
planarization on **semiconductor** substrates)
- IT Abrasives
Chelating agents
Corrosion inhibitors
Electric contacts
Interconnections, electric
Oxidizing agents
Passivation
Surfactants
(passivative **chemical-mech.** polishing slurry for
copper film **planarization** on **semiconductor**
substrates)
- IT Group IIIA element compounds
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)
(perborates, polishing slurry oxidizing agent; passivative **chem**
-mech. polishing slurry for copper film
planarization on **semiconductor** substrates)
- IT Per compounds
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)
(percarbonates, polishing slurry oxidizing agent; passivative
chemical-mech. polishing slurry for copper film
planarization on **semiconductor** substrates)
- IT Halogen compounds
Per compounds
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)
(periodates, polishing slurry oxidizing agent; passivative **chem**
-mech. polishing slurry for copper film
planarization on **semiconductor** substrates)
- IT Carbides
Epoxy resins, processes
Oxides (inorganic), processes
Polyamides, processes
Polycarbonates, processes
Polyesters, processes
Polyolefins
Urethanes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing slurry abrasive; passivative **chemical-mech.**
polishing slurry for copper film **planarization** on
semiconductor substrates)
- IT Amino acids, processes
Polyamines
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing slurry chelating agent; passivative **chemical-**
mech. polishing slurry for copper film **planarization**
on **semiconductor** substrates)
- IT Bromates
Chlorates
Chlorites
Chromates
Cyanides (inorganic), processes
Hypochlorites

- Permanganates
Peroxy acids
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing slurry oxidizing agent; passivative **chemical-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT Tannins
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing slurry pH adjusting agent; passivative **chemical-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT Betaines
Polyoxyalkylenes, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing slurry **surfactant**; passivative **chemical-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT Carboxylic acids, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polycarboxylic, polishing slurry chelating agent; passivative **chemical-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT Polishing materials
(slurries; passivative **chemical-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT Plastics, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(thermoplastics, polishing slurry abrasive; passivative **chem.-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT 7440-50-8, Copper, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(passivative **chemical-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT 409-21-2, Silicon carbide (SiC), processes 1306-38-3, Ceria, processes 1314-23-4, Zirconia, processes 1332-29-2, Tin oxide 1332-37-2, Iron oxide, processes 1344-28-1, Alumina, processes 7631-86-9, Silica, processes 9002-86-2, Polyvinyl chloride 9003-53-6 12033-89-5, Silicon nitride, processes 13463-67-7, Titania, processes 25087-26-7D, Polymethacrylic acid, derivs.
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing slurry abrasive; passivative **chemical-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT 100-37-8, N,N-Diethylethanolamine 102-71-6, Triethanolamine, processes 103-76-4, 1-Piperazineethanol 108-01-0, N,N-Dimethylethanolamine 109-83-1, N-Methylethanolamine 110-73-6, N-Ethylethanolamine 111-42-2, Diethanolamine, processes 141-43-5, Monoethanolamine, processes 156-87-6, Propanolamine 622-40-2, 4-(2-Hydroxyethyl)morpholine

- 929-06-6, Diethyleneglycolamine 3179-63-3, N,N-Dimethylpropanolamine
6168-72-5, Propanolamine 7803-49-8, Hydroxylamine, processes
28631-79-0, Aminoethylpiperazine 42055-16-3, 1-Propanol, 3-ethylamino
117057-12-2, N,N-Diethylpropanolamine
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing slurry additive; passivative **chemical-mech.**
polishing slurry for copper film **planarization** on
semiconductor substrates)
- IT 88-99-3, Phthalic acid, processes 6915-15-7, Malic acid
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing slurry chelating agent, polishing slurry pH adjusting agent; passivative **chemical-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT 56-41-7, Alanine, processes 56-45-1, Serine, processes 56-84-8, Aspartic acid, processes 56-85-9, Glutamine, processes 56-87-1, Lysine, processes 60-00-4, Ethylenediaminetetraacetic acid, processes 61-90-5, Leucine, processes 67-43-6, Diethylenetriaminepentaacetic acid 70-47-3, Asparagine, processes 72-18-4, Valine, processes 90-64-2, Mandelic acid 110-15-6, Succinic acid, processes 139-13-9, Nitrilotriacetic acid 144-62-7, Oxalic acid, processes 147-85-3, Proline, processes 150-39-0, N-Hydroxyethylethylenediaminetriacetic acid 517-60-2, Mellitic acid
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing slurry chelating agent; passivative **chemical-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT 56-40-6, Glycine, processes 95-14-7, 1H-Benzotriazole 2592-95-2, 1-Hydroxybenzotriazole 4418-61-5, 5-Aminotetrazole 7722-84-1, Hydrogen peroxide, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing slurry containing; passivative **chemical-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT 51-17-2, Benzimidazole 288-32-4, Imidazole, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing slurry corrosion inhibitor; passivative **chemical-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT 79-21-0, Peracetic acid 106-51-4, 2,5-Cyclohexadiene-1,4-dione, processes 110-05-4, Di-tert-butyl peroxide 124-43-6, Urea-hydrogen peroxide 506-46-7D, Ceric acid, salts 1185-57-5, Ferric ammonium citrate 2537-36-2, Tetramethylammonium perchlorate 7637-03-8, Ammonium ceric sulfate 7722-64-7, Potassium permanganate 7758-05-6, Potassium iodate 10421-48-4, Ferric nitrate 12125-80-3, Ferrocenium 13479-49-7, Iron(3+), tris(1,10-phenanthroline-κN1,κN10)-, (OC-6-11)- 13769-41-0, Potassium peroxoborate 13822-09-8, Benzyl peroxide 14221-47-7, Ferric ammonium oxalate 51232-88-3, Iron(3+), bis(pyridine)-
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing slurry oxidizing agent; passivative **chemical-mech.** polishing slurry for copper film **planarization** on **semiconductor** substrates)
- IT 50-21-5, Lactic acid, processes 64-18-6, Formic acid, processes

64-19-7, Acetic acid, processes 69-72-7, Salicylic acid, processes
 75-59-2, Tetramethylammonium hydroxide 77-92-9, Citric acid, processes
 77-98-5, Tetraethylammonium hydroxide 79-09-4, Propanoic acid, processes
 79-14-1, Glycolic acid, processes 87-69-4, Tartaric acid, processes
 100-85-6, Benzyltrimethylammonium hydroxide 107-92-6, Butanoic acid,
 processes 109-52-4, Pentanoic acid, processes 110-17-8, Fumaric acid,
 processes 110-94-1, Glutaric acid 111-14-8, Heptanoic acid 112-05-0,
 Nonanoic acid 120-80-9, Pyrocatechol, processes 123-41-1,
 Trimethylhydroxyethylammonium hydroxide 124-07-2, Octanoic acid,
 processes 141-82-2, Malonic acid, processes 142-62-1, Hexanoic acid,
 processes 149-91-7, Gallic acid, processes 503-74-2, Isovaleric acid
 526-95-4, Gluconic acid 569-51-7, 1,2,3-Benzenetricarboxylic acid
 631-41-4, Tetra(2-hydroxyethyl)ammonium hydroxide 1310-58-3, Potassium
 hydroxide, processes 1336-21-6, Ammonium hydroxide 7647-01-0,
 Hydrochloric acid, processes 7664-38-2, Phosphoric acid, processes
 7664-39-3, Hydrofluoric acid, processes 7664-93-9, Sulfuric acid,
 processes 7697-37-2, Nitric acid, processes 33667-48-0, Methyl
 tris(2-hydroxyethyl)ammonium hydroxide 35914-36-4, Pyrogallolcarboxylic
 acid

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
 process); PYP (Physical process); PROC (Process); USES (Uses)

(polishing slurry pH adjusting agent; passivative **chemical-
 mech.** polishing slurry for copper film **planarization**
 on **semiconductor** substrates)

IT 56-81-5, Glycerin, processes 57-55-6, Propylene glycol, processes
 64-17-5, Ethanol, processes 67-56-1, Methanol, processes 107-21-1,
 Ethylene glycol, processes 35296-72-1, Butanol 62309-51-7, Propanol
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
 process); PYP (Physical process); PROC (Process); USES (Uses)

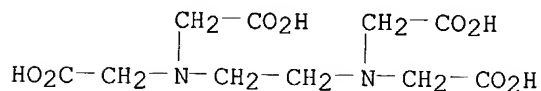
(polishing slurry solvent; passivative **chemical-mech.**
 polishing slurry for copper film **planarization** on
semiconductor substrates)

IT 140-72-7, Cetylpyridinium bromide 151-21-3, Sodium dodecyl sulfate,
 processes 9002-89-5, Polyvinyl alcohol 9002-98-6 9003-01-4,
 Polyacrylic acid 9003-20-7, Polyvinyl acetate 9003-39-8,
 Polyvinylpyrrolidone 25322-68-3, Polyethylene oxide
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
 process); PYP (Physical process); PROC (Process); USES (Uses)
 (polishing slurry **surfactant**; passivative **chemical-
 mech.** polishing slurry for copper film **planarization**
 on **semiconductor** substrates)

IT 60-00-4, Ethylenediaminetetraacetic acid, processes
 67-43-6, Diethylenetriaminepentaacetic acid 150-39-0,
 N-Hydroxyethylethylenediaminetriacetic acid
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
 process); PYP (Physical process); PROC (Process); USES (Uses)
 (polishing slurry chelating agent; passivative **chemical-
 mech.** polishing slurry for copper film **planarization**
 on **semiconductor** substrates)

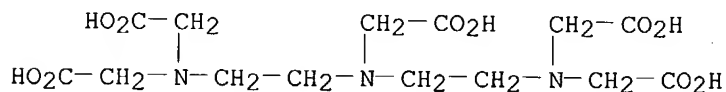
RN 60-00-4 HCAPLUS

CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



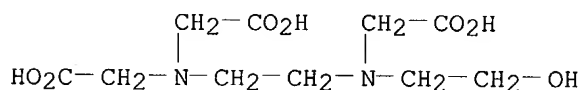
RN 67-43-6 HCAPLUS

CN Glycine, N,N-bis[2-[bis(carboxymethyl)amino]ethyl]- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 150-39-0 HCAPLUS

CN Glycine, N-[2-[bis(carboxymethyl)amino]ethyl]-N-(2-hydroxyethyl)- (9CI) (CA INDEX NAME)



L114 ANSWER 5 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:220019 HCAPLUS

DN 140:262615

TI Process solutions containing **surfactants** for **reduced defects** in **semiconductor** manufacture

IN Zhang, Peng; Curzi, Danielle Megan King; Karwacki, Eugene Joseph; Barber, Leslie Cox

PA USA

SO U.S. Pat. Appl. Publ., 19 pp., Cont.-in-part of U.S. Pat. Appl. 2004 29,396.

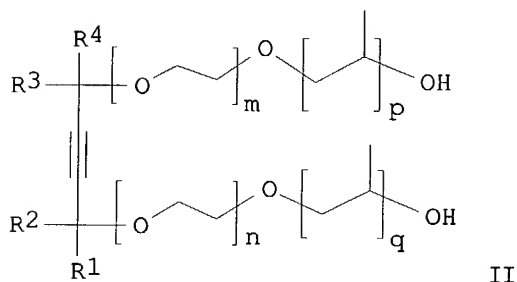
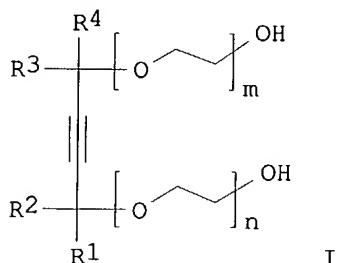
CODEN: USXXCO

DT Patent

LA English

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004053800	A1	20040318	US 2003-616662	20030710
	US 2004029395	A1	20040212	US 2002-218087	20020812
	US 2004029396	A1	20040212	US 2003-339709	20030109
	EP 1389746	A2	20040218	EP 2003-17570	20030807
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2004078217	A2	20040311	JP 2003-292481	20030812
PRAI	US 2002-218087	A2	20020812		
	US 2003-339709	A2	20030109		
	US 2003-616662	A	20030710		
OS	MARPAT 140:262615				
GI					



AB Process solns. comprising one or more **surfactants** are used to **reduce** the number of **defects** in the manufacture of **semiconductor** devices. In certain preferred embodiments, the process solution may **reduce** post-development **defects** such as pattern collapse when employed as a **rinse** solution either during or after the development of the patterned photoresist layer. A method for reducing the number of pattern collapse defects on a plurality of photoresist coated substrates employing the process solution during the manufacture of **semiconductor** devices, comprises: (1) providing a substrate; (2) contacting the substrate with a process solution comprising about 10 ppm to about 10,000 ppm of at least one **surfactant** having the formula (I) or (II), wherein R1 and R4 are a straight or a branched alkyl chain having from 3 to 10 carbon atoms; R2 and R3 are either H or an alkyl chain having from 1 to 5 carbon atoms; and m, n, p, and q are nos. that range from 0 to 20.

IC ICM C11D001-00

NCL 510175000

CC 76-3 (Electric Phenomena)

ST **semiconductor** manuf **defect redn** process
soln; ethoxylated propoxylated nonionic **surfactant** process soln;
quaternary ammonium salt ionic **surfactant** process soln

IT **Surfactants**
(ionic; process solns. containing **surfactants** for **reduced**
defects in **semiconductor** manufacture)

IT **Surfactants**
(nonionic; process solns. containing **surfactants** for
reduced defects in **semiconductor** manufacture)

IT Photoresists
Semiconductor devices
(process solns. containing **surfactants** for **reduced**
defects in **semiconductor** manufacture)

IT Quaternary ammonium compounds, properties
RL: PRP (Properties); TEM (Technical or engineered material use); USES

(Uses)

(process solns. containing **surfactants** for **reduced defects in semiconductor** manufacture)

IT 108-82-7D, 2,6-Dimethyl-4-heptanol, derivative 112-00-5,
 Dodecyltrimethylammonium chloride 126-86-3, 2,4,7,9-Tetramethyl-
 5-decyne-4,7-diol 3964-15-6 9014-85-1, Ethoxylated
 2,4,7,9-tetramethyl-5-decyne-4,7-diol 16016-41-4D, Diisopentyl
 tartrate, derivative 17913-76-7D, 2,4,7,9-Tetramethyl-4,7-decane diol,
 derivative 57718-69-1 68227-33-8 169117-72-0
 182211-02-5 373365-64-1 488783-16-0

RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)

(process solns. containing **surfactants** for **reduced defects in semiconductor** manufacture)

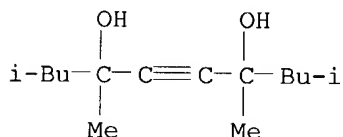
IT 126-86-3, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol 3964-15-6
 9014-85-1, Ethoxylated 2,4,7,9-tetramethyl-5-decyne-4,7-diol
 16016-41-4D, Diisopentyl tartrate, derivative 57718-69-1
 68227-33-8 169117-72-0 182211-02-5
 373365-64-1 488783-16-0

RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)

(process solns. containing **surfactants** for **reduced defects in semiconductor** manufacture)

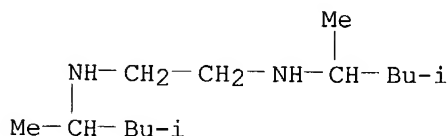
RN 126-86-3 HCAPLUS

CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



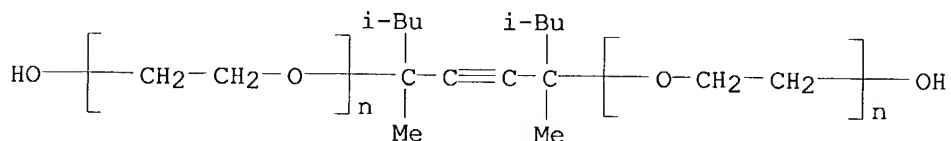
RN 3964-15-6 HCAPLUS

CN 1,2-Ethanediamine, N,N'-bis(1,3-dimethylbutyl)- (9CI) (CA INDEX NAME)



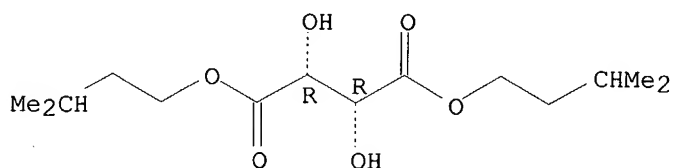
RN 9014-85-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α,α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)

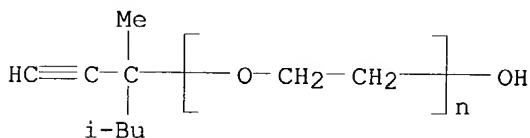


RN 16016-41-4 HCAPLUS
 CN Butanedioic acid, 2,3-dihydroxy- (2R,3R)-, bis(3-methylbutyl) ester (9CI)
 (CA INDEX NAME)

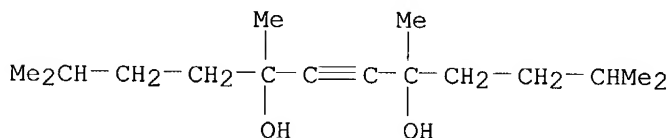
Absolute stereochemistry.



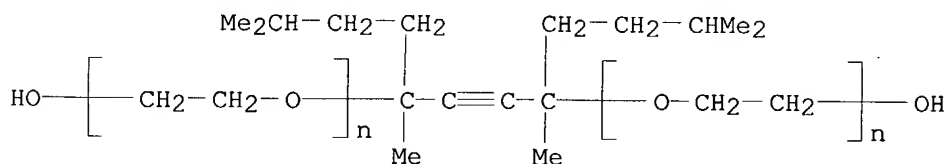
RN 57718-69-1 HCAPLUS
 CN Poly(oxy-1,2-ethanediyl), α -(1-ethynyl-1,3-dimethylbutyl)- ω -hydroxy- (9CI) (CA INDEX NAME)



RN 68227-33-8 HCAPLUS
 CN 6-Dodecyne-5,8-diol, 2,5,8,11-tetramethyl- (9CI) (CA INDEX NAME)



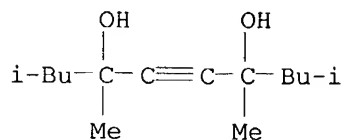
RN 169117-72-0 HCAPLUS
 CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(3-methylbutyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



RN 182211-02-5 HCAPLUS
 CN Oxirane, methyl-, polymer with oxirane, ether with 2,4,7,9-tetramethyl-5-decyne-4,7-diol (2:1) (9CI) (CA INDEX NAME)

CM 1

CRN 126-86-3
 CMF C14 H26 O2



CM 2

CRN 9003-11-6

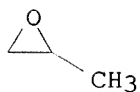
CMF (C3 H6 O . C2 H4 O) x

CCI PMS

CM 3

CRN 75-56-9

CMF C3 H6 O



CM 4

CRN 75-21-8

CMF C2 H4 O



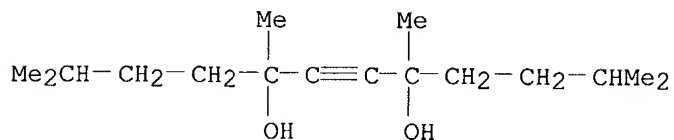
RN 373365-64-1 HCAPLUS

CN Oxirane, methyl-, polymer with oxirane, ether with 2,5,8,11-tetramethyl-6-dodecyne-5,8-diol (2:1) (9CI) (CA INDEX NAME)

CM 1

CRN 68227-33-8

CMF C16 H30 O2



CM 2

CRN 9003-11-6

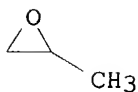
CMF (C3 H6 O . C2 H4 O) x

CCI PMS

CM 3

CRN 75-56-9

CMF C3 H6 O



CM 4

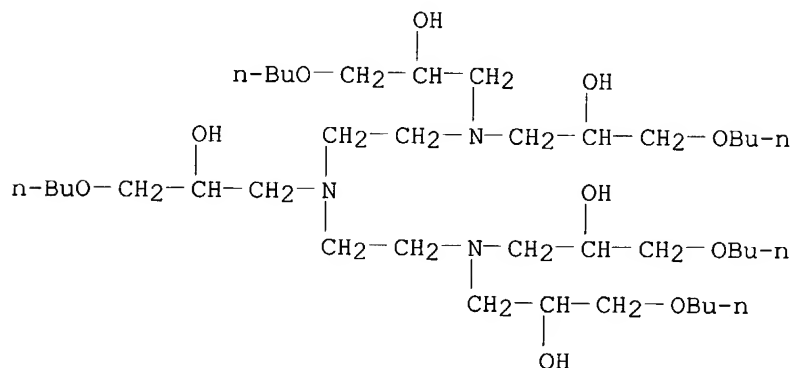
CRN 75-21-8

CMF C2 H4 O



RN 488783-16-0 HCAPLUS

CN 5,19-Dioxa-9,12,15-triazatricosane-7,17-diol, 9,12,15-tris(3-butoxy-2-hydroxypropyl)- (9CI) (CA INDEX NAME)



L114 ANSWER 6 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:219911 HCAPLUS

DN 140:278423

TI Acetylenic diol **surfactant** solutions and methods of using same

IN Zhang, Peng; Curzi, Danielle Megan King; Karwacki, Eugene Joseph; Barber, Leslie Cox

PA USA

SO U.S. Pat. Appl. Publ., 11 pp., Cont.-in-part of U.S. Ser. No. 218,068.
CODEN: USXXCO

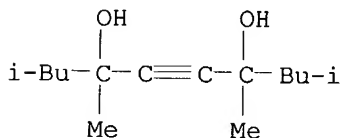
DT Patent

LA English

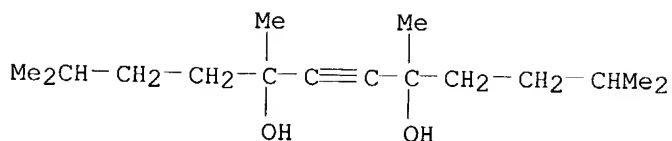
FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI US 2004053172 A1 20040318 US 2003-634608 20030804
 US 6641986 B1 20031104 US 2002-218068 20020812
 JP 2004094241 A2 20040325 JP 2003-292443 20030812
 PRAI US 2002-218068 A2 20020812
 US 2003-634608 A 20030804
 OS MARPAT 140:278423
 AB Process solns. for **semiconductor** device fabrication comprising one or more acetylenic diol type **surfactants** are used to improve the wettability of a substrate surface by lowering the contact angle of the aqueous developer solution are enclosed herein. In one embodiment, the process solution is used to prepare the surface of the substrate prior to the development of the resist coating layer.
 IC ICM G03F007-30
 ICS G03F007-38; C11D017-00; B01D012-00; B01F017-00
 NCL 430325000; 430271100; 430327000; 430331000; 510175000; 510176000; 510421000; 516204000; 568616000; 568855000
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 76
 ST **semiconductor** device fabrication acetylenic diol **surfactant** surface **treatment**
 IT Resists
Semiconductor device fabrication
 Surface **treatment**
Surfactants
 (acetylenic diol **surfactant** solns. for surface **treatment** of resist coating)
 IT 7732-18-5, Water, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (Deionized; acetylenic diol **surfactant** solns. for surface **treatment** of resist coating)
 IT 67-63-0, Isopropyl alcohol, uses **126-86-3**, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol **68227-33-8**
 RL: TEM (Technical or engineered material use); USES (Uses)
 (acetylenic diol **surfactant** solns. for surface **treatment** of resist coating)
 IT **126-86-3**, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol **68227-33-8**
 RL: TEM (Technical or engineered material use); USES (Uses)
 (acetylenic diol **surfactant** solns. for surface **treatment** of resist coating)
 RN 126-86-3 HCAPLUS
 CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 68227-33-8 HCAPLUS
 CN 6-Dodecyne-5,8-diol, 2,5,8,11-tetramethyl- (9CI) (CA INDEX NAME)



L114 ANSWER 7 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:198610 HCAPLUS

DN 140:244785

TI **Chemical-mechanical** polishing process for forming

wiring structures, and abrasive compositions used therein

IN Sakai, Kenji; Tamai, Kazumasa; Kawamura, Atsunori; Matsuda, Takeshi;
Hirano, Tatsuhiko; Ina, Katsuyoshi

PA Fujimi, Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 22 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004075862	A2	20040311	JP 2002-238596	20020819
	US 2004084414	A1	20040506	US 2003-642929	20030818
PRAI	JP 2002-238596	A	20020819		

OS MARPAT 140:244785

AB The process for polishing of a material having a Cu-based elec. conductive layer formed on a barrier layer on an elec. insulating layer having concave parts, involves (1) polishing of the elec. conductive layer not to expose the barrier layer with an abrasive composition containing abrasives (A) selected from SiO₂ and Al₂O₃, polishing accelerators (B) selected from glycine and α-alanine, H₂O, and H₂O₂, (2) polishing of the elec. conductive layer to expose the barrier layer with an abrasive composition containing the abrasives (A), the polishing accelerators (B), organic compds.

(C) selected from poly(ethylene oxide), poly(propylene oxide), polyoxyethylene alkyl ethers, polyoxypropylene alkyl ethers, polyoxyethylene-polyoxypropylene alkyl ethers, and polyoxyalkylene addition polymers having carbon triple bonds R1O(X)mCR3R5C.tplbond.CCR4R6(Y)nOR2 (R1-R6 = H, C1-10 alkyl; X, Y = ethyleneoxy, propyleneoxy; m, n = 1-20), corrosion inhibitors (D) selected from benzotriazole and its derivs., H₂O₂, and H₂O, and (3) polishing of the barrier layer with an abrasive composition containing

the abrasives (A), acids (E) selected from HNO₃, HCl, lactic acid, H₃PO₄, H₂SO₄, AcOH, oxalic acid, citric acid, tartaric acid, malonic acid, succinic acid, maleic acid, and fumaric acid or alkalies (F) selected from KOH, NH₄OH, and NaOH, the corrosion inhibitors (D), and H₂O. The process prevents dishing or erosion.

IC ICM C09K003-14

ICS B24B037-00; H01L021-304

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 37, 57

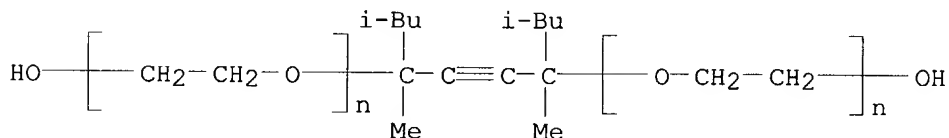
ST **chem mech** polishing abrasive compn wiring; dishing
erosion prevention **chem mech** polishing

IT Alcohols, uses

RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)

- (alkoxylated; **chemical-mech.** polishing process and abrasive compns. for forming wiring structures without dishing or erosion)
- IT Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(alkyl ethers; **chemical-mech.** polishing process and abrasive compns. for forming wiring structures without dishing or erosion)
- IT Abrasives
Corrosion inhibitors
Electric conductors
Polishing materials
Semiconductor device fabrication
(**chemical-mech.** polishing process and abrasive compns. for forming wiring structures without dishing or erosion)
- IT Acids, uses
Bases, uses
Polyoxyalkylenes, uses
Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(**chemical-mech.** polishing process and abrasive compns. for forming wiring structures without dishing or erosion)
- IT Polishing
(**chemical-mech.**; **chemical-mech.** polishing process and abrasive compns. for forming wiring structures without dishing or erosion)
- IT Alcohols, uses
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(ethoxylated; **chemical-mech.** polishing process and abrasive compns. for forming wiring structures without dishing or erosion)
- IT Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(mono(alkyl group)-terminated; **chemical-mech.** polishing process and abrasive compns. for forming wiring structures without dishing or erosion)
- IT 7440-50-8, Copper, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**chemical-mech.** polishing process and abrasive compns. for forming wiring structures without dishing or erosion)
- IT 50-21-5, Lactic acid, uses 56-40-6, Glycine, uses 56-41-7, α -Alanine, uses 64-19-7, Acetic acid, uses 77-92-9, Citric acid, uses 87-69-4, Tartaric acid, uses 110-15-6, Succinic acid, uses 110-16-7, Maleic acid, uses 110-17-8, Fumaric acid, uses 141-82-2, Malonic acid, uses 144-62-7, Oxalic acid, uses 1310-58-3, Potassium hydroxide, uses 1310-73-2, Sodium hydroxide, uses 1336-21-6, Ammonium hydroxide 1344-28-1, Aluminum oxide, uses 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 7722-84-1, Hydrogen peroxide, uses 9003-11-6D, Ethylene oxide-propylene oxide copolymer, alkyl ethers
9014-85-1 25322-68-3, Poly(ethylene oxide) 25322-68-3D, Polyethylene glycol, alkyl ethers 25322-69-4, Poly(propylene oxide) 25322-69-4D, Polypropylene glycol, alkyl ethers
RL: NUU (Other use, unclassified); TEM (Technical or engineered material

- use); USES (Uses)
 (chemical-mech. polishing process and abrasive compns.
 for forming wiring structures without dishing or erosion)
- IT 7631-86-9, Colloidal silica, uses
 RL: NUU (Other use, unclassified); TEM (Technical or engineered material
 use); USES (Uses)
 (colloidal; chemical-mech. polishing process and
 abrasive compns. for forming wiring structures without dishing or
 erosion)
- IT 95-14-7, 1H-Benzotriazole
 RL: NUU (Other use, unclassified); TEM (Technical or engineered material
 use); USES (Uses)
 (corrosion inhibitor; chemical-mech. polishing process
 and abrasive compns. for forming wiring structures without dishing or
 erosion)
- IT 9014-85-1
 RL: NUU (Other use, unclassified); TEM (Technical or engineered material
 use); USES (Uses)
 (chemical-mech. polishing process and abrasive compns.
 for forming wiring structures without dishing or erosion)
- RN 9014-85-1 HCAPLUS
- CN Poly(oxy-1,2-ethanediyl), α,α' -[1,4-dimethyl-1,4-bis(2-
 methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX
 NAME)



L114 ANSWER 8 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:179891 HCAPLUS

DN 140:227271

TI **Semiconductor** devices, their wiring structures, dielectric thin
 films therefor, and coatings for the films

IN Shirataki, Hironobu

PA Asahi Kasei Corporation, Japan

SO Jpn. Kokai Tokkyo Koho, 29 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004067435	A2	20040304	JP 2002-228160	20020806
PRAI	JP 2002-228160		20020806		

OS MARPAT 140:227271

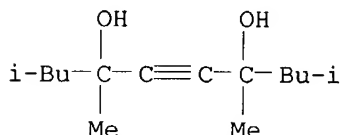
AB Dielec. porous silica films formed from aqueous coatings (also claimed)
 containing

(A) silica precursors and (B) orgs. are claimed. The silica precursors
 contain $\text{R}_1\text{nSi}(\text{OR}_2)_4-\text{n}$ and/or $\text{R}_3\text{m}(\text{R}_4\text{O})_3-\text{mSiR}_7\text{pSi}(\text{OR}_5)_3-\text{qR}_6\text{q}$ [$\text{R}_1-\text{R}_6 = \text{H}$,
 monovalent organic group; $\text{n} = 0-3$; $\text{m}, \text{q} = 0-2$; $\text{R}_7 = \text{O}$, $(\text{CH}_2)_r$ ($r = 1-6$); $\text{p} =$
 $0, 1$] and satisfy ratio of mono-to-trifunctional alkoxysilane-derived Si
 to alkoxysilane-derived Si 5-80 mol%. The orgs. are acetylene derivs.
 $\text{R}_8\text{MeC}(\text{OR}_9)\text{C.tplbond.CC}(\text{OR}'_9)\text{MeR}'_8$ [$\text{R}_8, \text{R}'_8 = \text{H}$, C_1-10 alkyl; $\text{R}_9, \text{R}'_9 = \text{H}$,

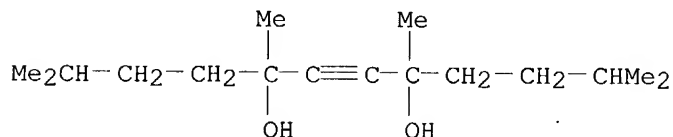
Cl-10 alkyl, (CH₂CH₂O)_xH (x ≤ 20)]. The coatings may further contain 0.01-10% (to A) multinary polyether block copolymers. The coatings cause no striations nor agglomerations and form layers with extremely low dielec. constant and good resistance against **CMP** (**chemical mech.** polishing).

- IC ICM C03B008-02
ICS C03B019-12; C03B020-00; H01L021-316; H01L021-768
- CC 76-3 (Electric Phenomena)
Section cross-reference(s): 57
- ST **semiconductor** interlayer insulator porous silica precursor coating; acetylene deriv silica precursor silicate coating; striation free coating dielec film **CMP** resistant
- IT **Semiconductor** devices
(aqueous alkoxyasilane coatings forming **CMP**-resistant porous dielec. films for **semiconductor** wiring structures)
- IT Dielectric films
(interlayer insulators; aqueous alkoxyasilane coatings forming **CMP**-resistant porous dielec. films for **semiconductor** wiring structures)
- IT Silsesquioxanes
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(silicate-; aqueous alkoxyasilane coatings forming **CMP**-resistant porous dielec. films for **semiconductor** wiring structures)
- IT Silicates, processes
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(silsesquioxane-; aqueous alkoxyasilane coatings forming **CMP**-resistant porous dielec. films for **semiconductor** wiring structures)
- IT Electric conductors
(wirings; aqueous alkoxyasilane coatings forming **CMP**-resistant porous dielec. films for **semiconductor** wiring structures)
- IT **126-86-3**, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(Olfine AK 02; aqueous alkoxyasilane coatings forming **CMP**-resistant porous dielec. films for **semiconductor** wiring structures)
- IT 512195-55-0P, Bis(triethoxysilyl)ethane-methyltriethoxysilane-tetraethoxysilane copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(aqueous alkoxyasilane coatings forming **CMP**-resistant porous dielec. films for **semiconductor** wiring structures)
- IT **68227-33-8**, **Surfynol** DF 110 664998-25-8D, 1,3-Butanediol-ethylene glycol block copolymer, di Me-terminated
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(aqueous alkoxyasilane coatings forming **CMP**-resistant porous dielec. films for **semiconductor** wiring structures)
- IT 7631-86-9P, Silica, uses
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(porous, interlayer dielects.; aqueous alkoxyasilane coatings forming **CMP**-resistant porous dielec. films for **semiconductor** wiring structures)

IT **126-86-3**, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (Olfine AK 02; aqueous alkoxy silane coatings forming **CMP**-resistant porous dielec. films for **semiconductor** wiring structures)
 RN 126-86-3 HCAPLUS
 CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT **68227-33-8**, **Surfynol** DF 110
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (aqueous alkoxy silane coatings forming **CMP**-resistant porous dielec. films for **semiconductor** wiring structures)
 RN 68227-33-8 HCAPLUS
 CN 6-Dodecyne-5,8-diol, 2,5,8,11-tetramethyl- (9CI) (CA INDEX NAME)



L114 ANSWER 9 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2004:143236 HCAPLUS
 DN 140:208705
 TI **CMP** abrasives and **CMP** polishing substrates
 IN Haga, Kouji; Ootsuki, Yuto; Kurata, Yasushi; Enomoto, Kazuhiro
 PA Hitachi Chemical Co., Ltd., Japan
 SO PCT Int. Appl., 25 pp.
 CODEN: PIXXD2
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004015021	A1	20040219	WO 2003-JP10001	20030806
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU				
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,				

GW, ML, MR, NE, SN, TD, TG

PRAI JP 2002-233702 A 20020809
JP 2003-59280 A 20030306

OS MARPAT 140:208705

AB The title abrasives comprise cerium oxide particles, an organic compound containing C.tplbond.C bonding, and water. **CMP** process employing the abrasives gives high efficiency and high speed polishing possible, especially for leveling of interlayer insulator films and shallow trench isolation insulator films in fabrication of **semiconductor** devices.

IC ICM C09K003-14
ICS H01L021-304; B24B037-00

CC 76-3 (Electric Phenomena)
Section cross-reference(s): 57

ST cerium oxide particle abrasive **CMP** polishing insulator; triple bond carbon org compd polishing abrasive

IT Abrasives
Semiconductor device fabrication
(**CMP** abrasives and **CMP** polishing substrates)

IT Triple bond
(carbon-carbon, organic compound, abrasive containing; **CMP** abrasives and **CMP** polishing substrates)

IT Polishing
(**chemical-mech.**; **CMP** abrasives and **CMP** polishing substrates)

IT Dielectric films
(leveling, **CMP** for; **CMP** abrasives and **CMP** polishing substrates)

IT 7732-18-5, Water, properties 9003-03-6, Ammonium polyacrylic acid
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(**CMP** abrasives and **CMP** polishing substrates)

IT 9014-85-1
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(abrasive materials; **CMP** abrasives and **CMP** polishing substrates)

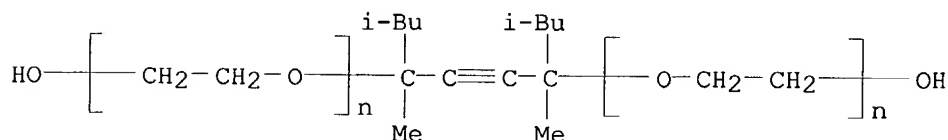
IT 11129-18-3, Cerium oxide
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(abrasive particles; **CMP** abrasives and **CMP** polishing substrates)

IT 7631-86-9, Silica, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(insulator, leveling by **CMP**; **CMP** abrasives and **CMP** polishing substrates)

IT 9014-85-1
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(abrasive materials; **CMP** abrasives and **CMP** polishing substrates)

RN 9014-85-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α,α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 10 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:136499 HCAPLUS

DN 140:191075

TI Process solutions containing **surfactants** for **reducing defects** caused by pattern collapse in **semiconductor** device manufacturing

IN Zhang, Peng; King, Danielle Megan; Karwacki, Eugene Joseph, Jr.; Barber, Leslie Cox

PA Air Products and Chemicals, Inc., USA

SO Eur. Pat. Appl., 25 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1389746	A2	20040218	EP 2003-17570	20030807
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	US 2004029395	A1	20040212	US 2002-218087	20020812
	US 2004029396	A1	20040212	US 2003-339709	20030109
	US 2004053800	A1	20040318	US 2003-616662	20030710
PRAI	US 2002-218087	A	20020812		
	US 2003-339709	A	20030109		
	US 2003-616662	A	20030710		

OS MARPAT 140:191075

AB The present invention relates to a method for **reducing defects**, particularly pattern collapse, in **semiconductor** devices incurred during the manufacturing process without sacrificing throughput. Process solns. comprising ≥ 1 **surfactants** are used to **reduce** the number of **defects** in the manufacture of **semiconductor** devices. In certain preferred embodiments, the process solution of the present invention may **reduce** post-development **defects** such as pattern collapse when employed as a **rinse** solution either during or after the development of the patterned photoresist layer. Also disclosed is a method for reducing the number of pattern collapse defects on a plurality of photoresist coated substrates employing the process solution of the present invention.

IC ICM G03F007-16

ICS G03F007-40

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 74

ST **semiconductor** device **defect** **redn** pattern collapse photoresist **surfactant**

IT Crystal **defects**

(prevention of; process solns. containing **surfactants** for **reducing defects** caused by pattern collapse in **semiconductor** device manufacturing)

IT Antireflective films
Dispersing agents
Photolithography
Photoresists
Semiconductor device fabrication
Surfactants
(process solns. containing **surfactants** for **reducing defects** caused by pattern collapse in **semiconductor** device manufacturing)

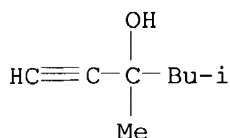
IT 68890-84-6, SMA 1440
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(dispersant; process solns. containing **surfactants** for **reducing defects** caused by pattern collapse in **semiconductor** device manufacturing)

IT 75-59-2, Tetramethyl ammonium hydroxide
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(process solns. containing **surfactants** for **reducing defects** caused by pattern collapse in **semiconductor** device manufacturing)

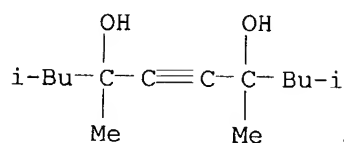
IT 107-54-0, 3,5-Dimethyl-1-hexyn-3-ol 108-82-7,
2,6-Dimethyl-4-heptanol 111-40-0, Diethylenetriamine 112-00-5,
Dodecyltrimethylammonium chloride 126-86-3, 2,4,7,9-Tetramethyl-
5-decyne-4,7-diol 2426-08-6, n-Butyl glycidyl ether 3964-15-6,
1,2-Ethanediamine, N,N'-bis(1,3-dimethylbutyl)- 16016-41-4,
Butanedioic acid, 2,3-dihydroxy-(2R,3R)-, bis(3-methylbutyl) ester
17913-76-7, 2,4,7,9-Tetramethyl-4,7-decane diol 68227-33-8,
6-Dodecyne-5,8-diol, 2,5,8,11-tetramethyl-
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**surfactant**; process solns. containing **surfactants** for **reducing defects** caused by pattern collapse in **semiconductor** device manufacturing)

IT 107-54-0, 3,5-Dimethyl-1-hexyn-3-ol 126-86-3,
2,4,7,9-Tetramethyl-5-decyne-4,7-diol 3964-15-6,
1,2-Ethanediamine, N,N'-bis(1,3-dimethylbutyl)- 16016-41-4,
Butanedioic acid, 2,3-dihydroxy-(2R,3R)-, bis(3-methylbutyl) ester
68227-33-8, 6-Dodecyne-5,8-diol, 2,5,8,11-tetramethyl-
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**surfactant**; process solns. containing **surfactants** for **reducing defects** caused by pattern collapse in **semiconductor** device manufacturing)

RN 107-54-0 HCAPLUS
CN 1-Hexyn-3-ol, 3,5-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

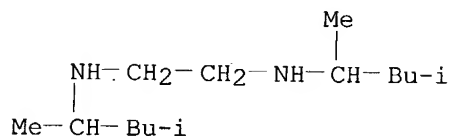


RN 126-86-3 HCAPLUS
CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 3964-15-6 HCAPLUS

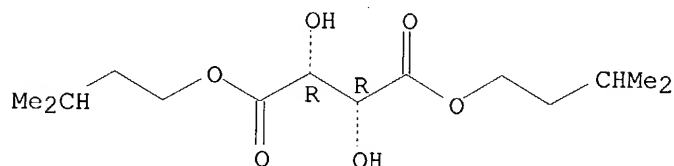
CN 1,2-Ethanediamine, N,N'-bis(1,3-dimethylbutyl)- (9CI) (CA INDEX NAME)



RN 16016-41-4 HCAPLUS

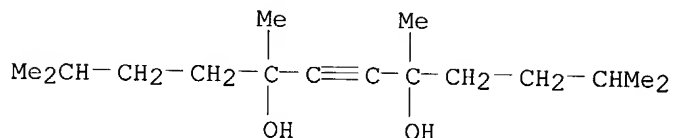
CN Butanedioic acid, 2,3-dihydroxy- (2R,3R)-, bis(3-methylbutyl) ester (9CI)
(CA INDEX NAME)

Absolute stereochemistry.



RN 68227-33-8 HCAPLUS

CN 6-Dodecyne-5,8-diol, 2,5,8,11-tetramethyl- (9CI) (CA INDEX NAME)



L114 ANSWER 11 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:119934 HCAPLUS

DN 140:191055

TI Process solutions containing **surfactants** for manufacturing
semiconductor devicesIN Zhang, Peng; Curzi, Danielle Megan King; Karwacki, Eugene Joseph; Barber,
Leslie Cox

PA USA

SO U.S. Pat. Appl. Publ., 18 pp., Cont.-in-part of U.S. Ser. No 218,087.
CODEN: USXXCO

DT Patent

LA English

FAN.CNT 4

PATENT NO.

KIND

DATE

APPLICATION NO.

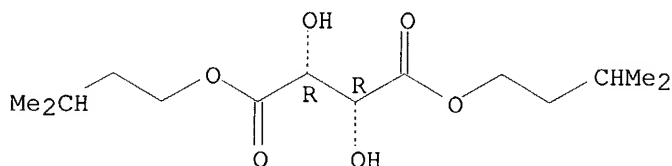
DATE

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

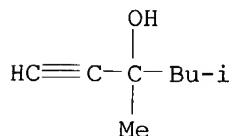
PI US 2004029396 A1 20040212 US 2003-339709 20030109
US 2004029395 A1 20040212 US 2002-218087 20020812
US 2004053800 A1 20040318 US 2003-616662 20030710
EP 1389746 A2 20040218 EP 2003-17570 20030807
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
JP 2004078217 A2 20040311 JP 2003-292481 20030812
PRAI US 2002-218087 A2 20020812
US 2003-339709 A2 20030109
US 2003-616662 A 20030710
OS MARPAT 140:191055
AB The present invention relates generally to methods for the manufacture of
semiconductor devices. More specifically, the present invention
relates to a method for **reducing defects**, particularly
pattern collapse, in **semiconductor** devices incurred during the
manufacturing process without sacrificing throughput. Process solns.
comprising
≥1 **surfactants** are used to **reduce** the number of
defects in the manufacture of **semiconductor** devices. In
certain preferred embodiments, the process solution of the present invention
may **reduce** post-development **defects** such as pattern
collapse when employed as a **rinse** solution either during or after
the development of the patterned photoresist layer. Also disclosed is a
method for reducing the number of pattern collapse defects on a plurality of
photoresist coated substrates employing the process solution of the present
invention.
IC ICM H01L021-302
NCL 438748000
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 66
ST **semiconductor** device fabrication process soln **surfactant**
IT Dispersing agents
Photolithography
Photoresists
Semiconductor device fabrication
Semiconductor materials
Surfactants
(process solns. containing **surfactants** for manufacturing
semiconductor devices)
IT 17913-76-7, 2,4,7,9-Tetramethyl-4,7-decanediol
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)
(EnviroGem AD 01; process solns. containing **surfactants** for
manufacturing **semiconductor** devices)
IT 16016-41-4, Diisopentyl tartrate 68890-84-6, SMA 1440
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)
(dispersant; process solns. containing **surfactants** for manufacturing
semiconductor devices)
IT 107-54-0, Surfynol 61 108-82-7, 2,6-Dimethyl-4-
heptanol 112-00-5, Dodecyltrimethylammonium chloride 126-86-3,
2,4,7,9-Tetramethyl-5-decyne-4,7-diol 3964-15-6,
1,2-Ethanediamine, N,N'-Bis(1,3-dimethylbutyl)- 68227-33-8,
6-Dodecyne-5,8-diol, 2,5,8,11-Tetramethyl- 169117-72-0,
Dynol 604 550347-67-6, Surfynol 2502
657404-91-6, Surfynol 450 657404-99-4,
Dynol 124 657406-11-6, EnviroGem AE 03
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical

- process); PYP (Physical process); PROC (Process); USES (Uses)
 (process solns. containing **surfactants** for manufacturing
semiconductor devices)
- IT 7440-21-3, Silicon, processes
 RL: PEP (Physical, engineering or chemical process); PYP (Physical
 process); TEM (Technical or engineered material use); PROC (Process); USES
 (Uses)
 (process solns. containing **surfactants** for manufacturing
semiconductor devices)
- IT 16016-41-4, Diisopentyl tartrate
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
 process); PYP (Physical process); PROC (Process); USES (Uses)
 (dispersant; process solns. containing **surfactants** for manufacturing
semiconductor devices)
- RN 16016-41-4 HCAPLUS
- CN Butanedioic acid, 2,3-dihydroxy- (2R,3R)-, bis(3-methylbutyl) ester (9CI)
 (CA INDEX NAME)

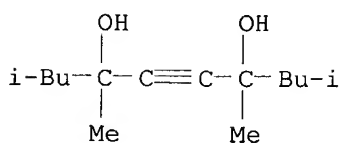
Absolute stereochemistry.



- IT 107-54-0, Surfynol 61 126-86-3,
 2,4,7,9-Tetramethyl-5-decyne-4,7-diol 3964-15-6,
 1,2-Ethanediamine, N,N'-Bis(1,3-dimethylbutyl)- 68227-33-8,
 6-Dodecyne-5,8-diol, 2,5,8,11-Tetramethyl- 169117-72-0,
 Dynol 604 550347-67-6, Surfynol 2502
 657404-91-6, Surfynol 450 657404-99-4,
 Dynol 124
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
 process); PYP (Physical process); PROC (Process); USES (Uses)
 (process solns. containing **surfactants** for manufacturing
semiconductor devices)
- RN 107-54-0 HCAPLUS
- CN 1-Hexyn-3-ol, 3,5-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

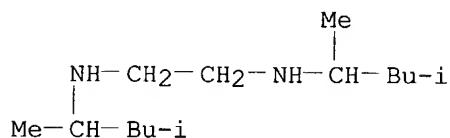


- RN 126-86-3 HCAPLUS
- CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX
 NAME)



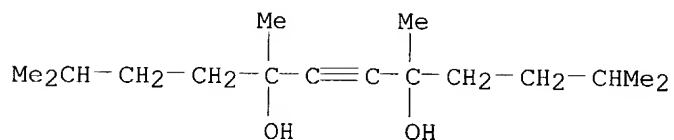
RN 3964-15-6 HCAPLUS

CN 1,2-Ethanediamine, N,N'-bis(1,3-dimethylbutyl)- (9CI) (CA INDEX NAME)

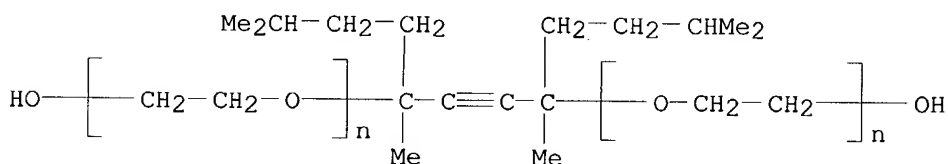


RN 68227-33-8 HCAPLUS

CN 6-Dodecyne-5,8-diol, 2,5,8,11-tetramethyl- (9CI) (CA INDEX NAME)



RN 169117-72-0 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α,α' -[1,4-dimethyl-1,4-bis(3-methylbutyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)

RN 550347-67-6 HCAPLUS

CN Surfynol 2502 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 657404-91-6 HCAPLUS

CN Surfynol 450 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 657404-99-4 HCAPLUS

CN Dynol 124 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

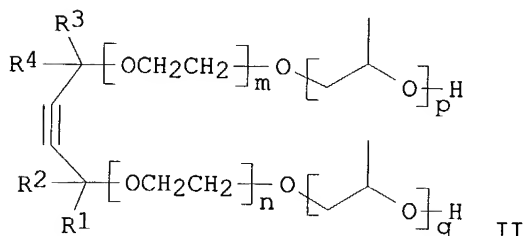
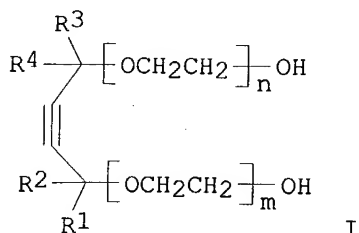
L114 ANSWER 12 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:119933 HCAPLUS

DN 140:191054

TI Method of **reducing defects** during
semiconductor device fabrication
 IN Zhang, Peng; King, Danielle Megan; Karwacki, Eugene Joseph; Barber, Leslie
 Cox
 PA USA
 SO U.S. Pat. Appl. Publ., 11 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 4

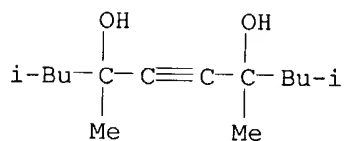
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004029395	A1	20040212	US 2002-218087	20020812
	US 2004029396	A1	20040212	US 2003-339709	20030109
	US 2004053800	A1	20040318	US 2003-616662	20030710
	EP 1389746	A2	20040218	EP 2003-17570	20030807
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
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PRAI	US 2002-218087	A2	20020812		
	US 2003-339709	A2	20030109		
	US 2003-616662	A	20030710		
OS	MARPAT 140:191054				
GI					



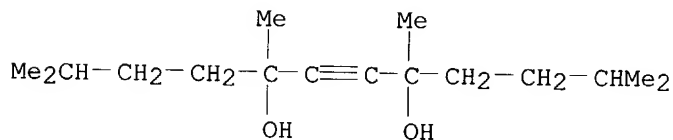
AB The invention relates to a method of **reducing defects** during **semiconductor** device fabrication, where the method incorporates **treatment** of the substrate with an acetylenic diol **surfactant**. The method consists of the steps of (i) providing a substrate; and (ii) contacting the substrate with a process solution comprising about 10-10,000 ppm of a **surfactant** having the formula (I) or (II), where R1 and R4 are a straight or a branched alkyl chain having from 3-10 carbon atoms; R2 and R3 are either H or an alkyl chain having from 1-5 carbon atoms, and m, n, p, and q are nos. that range from 0 to 20.

IC ICM H01L021-302
 ICS C07C043-11; C07C043-18; C07C043-20

NCL 438748000; 568616000
 CC 76-3 (Electric Phenomena)
 Section cross-reference(s): 23
 ST **redn defect semiconductor** device fabrication
 acetylenic diol **surfactant**
 IT Glycols, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (acetylenic, **surfactants**; method of **reducing**
defects during **semiconductor** device fabrication)
 IT Dispersing agents
Semiconductor device fabrication
Surfactants
 (method of **reducing defects** during
semiconductor device fabrication)
 IT Crystal **defects**
 (removal of; method of **reducing defects**
 during **semiconductor** device fabrication)
 IT **126-86-3**, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol **68227-33-8**
 , 6-Dodecyne-5,8-diol, 2,5,8,11-tetramethyl-
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**surfactants**; method of **reducing defects**
 during **semiconductor** device fabrication)
 IT **126-86-3**, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol **68227-33-8**
 , 6-Dodecyne-5,8-diol, 2,5,8,11-tetramethyl-
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**surfactants**; method of **reducing defects**
 during **semiconductor** device fabrication)
 RN 126-86-3 HCAPLUS
 CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX
 NAME)



RN 68227-33-8 HCAPLUS
 CN 6-Dodecyne-5,8-diol, 2,5,8,11-tetramethyl- (9CI) (CA INDEX NAME)



L114 ANSWER 13 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:1007461 HCAPLUS
 DN 140:51620
 TI Method and composition for polishing substrate in **semiconductor**
 device fabrication
 IN Liu, Feng Q.; Tsai, Stan D.; Hu, Yongqi; Neo, Siew S.; Wang, Yan; Duboust,
 Alain; Chen, Liang-Yuh
 PA Applied Materials, Inc., USA

SO U.S. Pat. Appl. Publ., 17 pp., Cont.-in-part of U.S. Ser. No. 378,097.
CODEN: USXXCO

DT Patent

LA English

FAN.CNT 19

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003234184	A1	20031225	US 2003-456220	20030606
	US 2003116446	A1	20030626	US 2001-32275	20011221
	US 2002130049	A1	20020919	US 2002-38066	20020103
	WO 2002075804	A2	20020926	WO 2002-US4806	20020219
	WO 2002075804	A3	20030626		
	W: CN, JP, KR, SG				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	EP 1368826	A2	20031210	EP 2002-717453	20020219
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	US 2003178320	A1	20030925	US 2003-378097	20030226
PRAI	US 2001-275874P	P	20010314		
	US 2001-32275	A2	20011221		
	US 2002-38066	A2	20020103		
	US 2002-359746P	P	20020226		
	US 2003-378097	A2	20030226		
	US 2001-286107P	P	20010424		
	US 2001-326263P	P	20011001		
	WO 2002-US4806	W	20020219		
AB	Polishing compns. and methods for removing conductive materials from a substrate surface are provided. In one aspect, a composition includes an acid based electrolyte system, one or more chelating agents, one or more corrosion inhibitors, one or more inorg. or organic acid salts, one or more pH adjusting agents to provide a pH between about 2 and about 10, a polishing enhancing material selected from the group of abrasive particles, one or more oxidizers, and combinations thereof, and a solvent. The composition may be used in an conductive material removal process including disposing a substrate having a conductive material layer formed thereon in a process apparatus comprising an electrode, providing the composition between the electrode and substrate, applying a bias between the electrode and the substrate, and removing conductive material from the conductive material layer. The electrochem.-mech. polishing (ECMP) compns. and methods described herein improve the effective removal rate of materials from the substrate surface, such as copper, with a reduction in planarization type defects and yielding a desirable surface finish.				
IC	ICM B23H009-00				
	ICS B23H007-00				
NCL	205680000; 205682000; 205685000; 252079200				
CC	76-3 (Electric Phenomena)				
ST	substrate polishing compn semiconductor device fabrication; electrochem mech polishing substrate semiconductor device fabrication				
IT	Polishing (apparatus; method and composition for polishing substrate in semiconductor device)				
IT	Amino acids, uses RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses) (chelating agent; method and composition for polishing substrate in semiconductor device)				

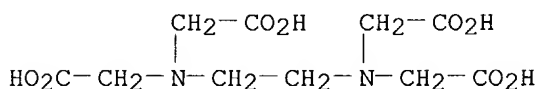
- IT Chelating agents
Corrosion inhibitors
Electrolytes
Oxidizing agents
Solvents
(composition containing; method and composition for polishing substrate in **semiconductor** device)
- IT Polishing
(electrochem., electrochem.-mech.; method and composition for polishing substrate in **semiconductor** device)
- IT Integrated circuits
Polishing
Semiconductor device fabrication
pH
(method and composition for polishing substrate in **semiconductor** device)
- IT Salts, uses
RL: NUU (Other use, unclassified); USES (Uses)
(organic, composition containing; method and composition for polishing substrate in **semiconductor** device)
- IT Abrasives
(particles, composition containing; method and composition for polishing substrate in **semiconductor** device)
- IT Electric conductors
(removal of; method and composition for polishing substrate in **semiconductor** device)
- IT 7631-86-9, Silica, uses
RL: NUU (Other use, unclassified); USES (Uses)
(abrasive particles; method and composition for polishing substrate in **semiconductor** device)
- IT 50-21-5, Lactic acid, uses 57-10-3, Palmitic acid, uses 57-11-4, Stearic acid, uses 60-00-4, uses 64-18-6, Formic acid, uses 77-92-9, Citric acid, uses 79-09-4, Propionic acid, uses 79-14-1, Glycolic acid, uses 87-69-4, Tartaric acid, uses 88-99-3, Phthalic acid, uses 107-15-3, Ethylenediamine, uses 107-92-6, Butyric acid, uses 109-52-4, Valeric acid, uses 110-15-6, Succinic acid, uses 110-16-7, Maleic acid, uses 110-17-8, Fumaric acid, uses 110-94-1, Glutaric acid 123-39-7, Methylformamide 124-04-9, Adipic acid, uses 124-07-2, Caprylic acid, uses 127-17-3, Pyruvic acid, uses 141-82-2, Malonic acid, uses 142-62-1, Caproic acid, uses 143-07-7, Lauric acid, uses 144-62-7, Oxalic acid, uses 334-48-5, Capric acid 544-63-8, Myristic acid, uses 6915-15-7, Malic acid
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(chelating agent; method and composition for polishing substrate in **semiconductor** device)
- IT 51-17-2, Benzimidazole 95-14-7, 1H-Benzotriazole 288-32-4, Imidazole, uses 288-88-0, 1H-1,2,4-Triazole 37306-44-8, Triazole
RL: MOA (Modifier or additive use); USES (Uses)
(corrosion inhibitor; method and composition for polishing substrate in **semiconductor** device)
- IT 64-19-7, Acetic acid, properties 7601-90-3, Perchloric acid, properties 7664-38-2, Phosphoric acid, properties 7664-93-9, Sulfuric acid, properties 7697-37-2, Nitric acid, properties
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
(electrolytes containing; method and composition for polishing substrate in **semiconductor** device)

IT 1113-38-8, Ammonium oxalate 2226-88-2, Ammonium succinate 3012-65-5, Ammonium citrate 7632-50-0, Ammonium citrate 15574-09-1, Ammonium succinate
 RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
 (method and composition for polishing substrate in **semiconductor** device)

IT 1310-58-3, Potassium hydroxide, uses 1336-21-6, Ammonium hydroxide
 RL: MOA (Modifier or additive use); USES (Uses)
 (pH adjusting agent; method and composition for polishing substrate in **semiconductor** device)

IT 60-00-4, uses
 RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
 (chelating agent; method and composition for polishing substrate in **semiconductor** device)

RN 60-00-4 HCAPLUS
 CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



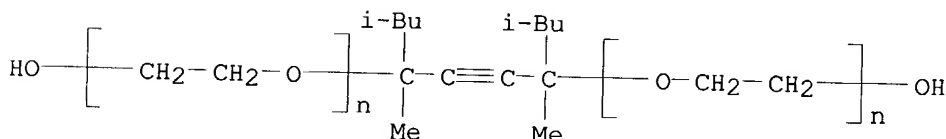
L114 ANSWER 14 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:971676 HCAPLUS
 DN 140:21988
 TI **Chemical-mech.** polishing method utilizing amphiphilic nonionic **surfactants**
 IN Schroeder, David J.; Moeggenborg, Kevin J.; Chou, Homer; Chamberlain, Jeffrey P.; Hawkins, Joseph D.; Carter, Phillip
 PA Cabot Microelectronics Corporation, USA
 SO U.S. Pat. Appl. Publ., 14 pp., Cont.-in-part of U.S. Ser. No. 165,100.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003228763	A1	20031211	US 2002-269864	<u>20021011</u>
	US 2003228762	A1	20031211	US 2002-165100	20020607
	WO 2004033574	A1	20040422	WO 2003-IB4296	20030929
	W:			AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM	
	RW:			GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG	
PRAI	US 2002-165100	A2	20020607		
	US 2002-269864	A	20021011		
AB	The invention provides methods of polishing a substrate comprising (a) contacting a substrate comprising at least one metal layer comprising copper with a chemical-mech. polishing (CMP)				

system and (b) abrading at least a portion of the metal layer comprising copper to polish the substrate. The **CMP** system comprises (a) an abrasive, (b) an amphiphilic nonionic **surfactant**, (c) a means for oxidizing the metal layer, (d) an organic acid, (e) a corrosion inhibitor, and (f) a liquid carrier. The method provides a two-step polishing a substrate comprising a first metal layer and a second, different metal layer. The first metal layer is polishing with a first **CMP** system comprising an abrasive and a liquid carrier, and the second metal layer is polished with a second **CMP** system comprising (a) an abrasive, (b) an amphiphilic nonionic **surfactant**, and (c) a liquid carrier.

- IC ICM H01L021-302
ICS H01L021-461
NCL 438691000
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 23
ST **chem mech** polishing amphiphilic nonionic
surfactant semiconductor
IT Corrosion inhibitors
(**chemical-mech.** polishing method utilizing amphiphilic
nonionic **surfactants**)
IT **Semiconductor** device fabrication
(**chemical-mech.** polishing; **chemical-**
mech. polishing method utilizing amphiphilic nonionic
surfactants)
IT Polishing
(**chemical-mech.**; **chemical-mech.**
polishing method utilizing amphiphilic nonionic **surfactants**)
IT Abrasives
(condensation-precipitated silica; **chemical-mech.** polishing
method utilizing amphiphilic nonionic **surfactants**)
IT **Surfactants**
(nonionic, amphiphilic; **chemical-mech.** polishing
method utilizing amphiphilic nonionic **surfactants**)
IT 50-21-5, Lactic acid, uses 64-19-7, Acetic acid, uses 79-09-4,
Propionic acid, uses 87-69-4, Tartaric acid, uses 88-99-3, Phthalic
acid, uses 95-14-7, 1H-Benzotriazole 136-85-6, 6-Tolyltriazole
144-62-7, Oxalic acid, uses 288-88-0, 1H-1,2,4-Triazole 7722-84-1,
Hydrogen peroxide, uses 9003-01-4, Polyacrylic acid 27070-49-1,
1,2,3-Triazole
RL: MOA (Modifier or additive use); USES (Uses)
(component of **CMP** paste; **chemical-mech.**
polishing method utilizing amphiphilic nonionic **surfactants**)
IT 7440-25-7, Tantalum, processes 7440-50-8, Copper, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); TEM (Technical or engineered material use); PROC (Process); USES
(Uses)
(film, substrate; **chemical-mech.** polishing method
utilizing amphiphilic nonionic **surfactants**)
IT 1344-28-1, Alumina, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fumed, abrasive; **chemical-mech.** polishing method
utilizing amphiphilic nonionic **surfactants**)
IT 7631-86-9, Silicon dioxide, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); TEM (Technical or engineered material use); PROC (Process); USES
(Uses)
(substrate and abrasive; **chemical-mech.** polishing
method utilizing amphiphilic nonionic **surfactants**)

- IT 107-15-3D, Ethylenediamine, polyalkylene oxide-modified 9004-87-9, Polyoxyethylene isooctyl phenyl ether 9005-63-4, Polyoxyethylenesorbitan 9014-85-1 9016-45-9, Polyoxyethylene nonyl phenyl ether 12441-09-7D, Sorbitan, alkyl acid ester 50851-57-5, Polystyrenesulfonic acid
- RL: MOA (Modifier or additive use); USES (Uses)
(**surfactant**; **chemical-mech.** polishing method utilizing amphiphilic nonionic **surfactants**)
- IT 9014-85-1
- RL: MOA (Modifier or additive use); USES (Uses)
(**surfactant**; **chemical-mech.** polishing method utilizing amphiphilic nonionic **surfactants**)
- RN 9014-85-1 HCAPLUS
- CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



Structure I

✓

L114 ANSWER 15 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:971675 HCAPLUS

DN 140:34598

TI **Chemical-mechanical** compositions for low-k dielectric materials

IN Moeggenborg, Kevin J.; Chou, Homer; Hawkins, Joseph D.; Chamberlain, Jeffrey P.

PA Cabot Microelectronics Corporation, USA

SO U.S. Pat. Appl. Publ., 11 pp.
CODEN: USXXCO

DT Patent

LA English

FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003228762	A1	20031211	US 2002-165100	20020607
US 2003228763	A1	20031211	US 2002-269864	20021011
WO 2003104343	A2	20031218	WO 2003-IB2266	20030526
WO 2003104343	A3	20040226		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI US 2002-165100 A2 20020607

AB The invention provides a method of polishing a substrate containing a low-k dielec. layer comprising (i) contacting the substrate with a **chem**

.-**mech.** polishing system comprising (a) an abrasive, a polishing pad, or a combination thereof, (b) an amphiphilic nonionic **surfactant** (e.g., Triton X 100 and Triton X 100R), and (c) a liquid carrier, and (ii) abrading at least a portion of the substrate to polish the substrate.

IC ICM H01L021-302
ICS H01L021-461

NCL 438691000

CC 76-3 (Electric Phenomena)

ST dielec **chem mech** polishing tantalum silica film

IT **Semiconductor** device fabrication
(**chemical-mech.** compns. for low-k dielec. materials)

IT Polishing
(**chemical-mech.**; **chemical-mech.**
compns. for low-k dielec. materials)

IT Polysiloxanes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(di-Me, 3-hydroxypropyl Me, ethers with polyethylene-polypropylene glycol mono-Me ether, Silwet 7001, **surfactant**; **chem**
.-**mech.** compns. for low-k dielec. materials)

IT Dielectric films
(low-k; **chemical-mech.** compns. for low-k dielec.
materials)

IT **Surfactants**
(nonionic, amphiphilic; **chemical-mech.** compns. for
low-k dielec. materials)

IT 9016-45-9, Igepal CO 890
RL: MOA (Modifier or additive use); USES (Uses)
(Igepal CO 210, Igepal CO 520, Igepal CO 630, Igepal CO 990,
surfactant; **chemical-mech.** compns. for low-k
dielec. materials)

IT 7429-90-5, Aluminum, processes 7439-88-5, Iridium, processes
7440-02-0, Nickel, processes 7440-16-6, Rhodium, processes 7440-18-8,
Ruthenium, processes 7440-25-7, Tantalum, processes 7440-32-6,
Titanium, processes 7440-33-7, Tungsten, processes 7440-50-8, Copper,
processes 7631-86-9D, Silicon dioxide, carbon-doped
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical,
engineering or chemical process); PROC (Process); USES (Uses)
(film; **chemical-mech.** compns. for low-k dielec.
materials)

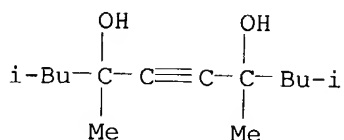
IT 334490-97-0, Black Diamond
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical,
engineering or chemical process); PROC (Process); USES (Uses)
(low-k dielec. film; **chemical-mech.** compns. for low-k
dielec. materials)

IT 126-86-3, Surfynol 104PA 9002-93-1, Triton X 100
9014-85-1, Surfynol 485 25805-17-8, Aquazol 50
92046-34-9, Triton X 100R 316356-99-7, Lupasol SKA
RL: MOA (Modifier or additive use); USES (Uses)
(**surfactant**; **chemical-mech.** compns. for
low-k dielec. materials)

IT 126-86-3, Surfynol 104PA 9014-85-1,
Surfynol 485
RL: MOA (Modifier or additive use); USES (Uses)
(**surfactant**; **chemical-mech.** compns. for
low-k dielec. materials)

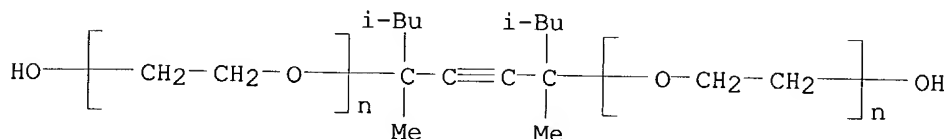
RN 126-86-3 HCAPLUS

CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX
NAME)



RN 9014-85-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α,α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



L114 ANSWER 16 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:950014 HCAPLUS

DN 140:21800

TI Solutions for cleaning polished aluminum-containing layers

IN Andreas, Michael T.

PA USA

SO U.S. Pat. Appl. Publ., 7 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003224958	A1	20031204	US 2002-157480	20020529
PRAI	US 2002-157480		20020529		

AB This invention relates generally to the field of **semiconductor** design and fabrication. Specifically, the invention relates to methods and solns. for cleaning polished metal layers, methods for fabricating metalization structures, and the structures resulting from these methods. The method for cleaning the polished Al-containing layer is practiced by contacting a polished Al-containing layer with a solution comprising H₂O and a corrosion-inhibiting agent. In these methods and solns., the H₂O may be deionized H₂O, the corrosion-inhibiting agent may be citric acid or 1 of its salts, and the solution may contain addnl. additives, such as chelating agents, buffers, oxidants, antioxidants, and **surfactants**. These methods and solns. reduce the corrosion caused by DI H₂O used in cleaning polished Al-containing layers and maintain a passivating environment which protects the exposed Al structures.

IC ICM C11D001-00

ICS C23G001-00

NCL 510202000; 510203000; 510254000; 510255000; 510210000

CC 76-2 (Electric Phenomena)

ST aluminum elec conductor cleaning

IT Polishing

(**chemical-mech.**; solns. for cleaning polished aluminum-containing layers)

IT Electric conductors
 (cleaning of; solns. for cleaning polished aluminum-containing layers)

IT Vapor deposition process
 (phys.; solns. for cleaning polished aluminum-containing layers)

IT Chelating agents
 Cleaning
 Corrosion inhibitors
Surfactants
 (solns. for cleaning polished aluminum-containing layers)

IT Interconnections, electric
 (via; solns. for cleaning polished aluminum-containing layers)

IT 50-81-7, Ascorbic acid, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (antioxidant; solns. for cleaning polished aluminum-containing layers)

IT 463-79-6, Carbonic acid, processes 1310-58-3, Potassium hydroxide, processes 1336-21-6, Ammonium hydroxide
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (buffer; solns. for cleaning polished aluminum-containing layers)

IT **60-00-4**, EDTA, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (chelating agent; solns. for cleaning polished aluminum-containing layers)

IT 77-92-9, Citric acid, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (corrosion inhibitor, chelating agent; solns. for cleaning polished aluminum-containing layers)

IT 87-69-4, Tartaric acid, processes 6915-15-7, Malic acid
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (corrosion inhibitor; solns. for cleaning polished aluminum-containing layers)

IT 7727-54-0, Ammonium persulfate
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (oxidizing agent; solns. for cleaning polished aluminum-containing layers)

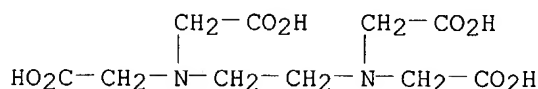
IT 75-59-2, Tetramethyl ammonium hydroxide 7664-38-2, Phosphoric acid, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (solns. for cleaning polished aluminum-containing layers)

IT 7429-90-5, Aluminum, processes 11099-19-7
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (solns. for cleaning polished aluminum-containing layers)

IT **60-00-4**, EDTA, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (chelating agent; solns. for cleaning polished aluminum-containing layers)

RN 60-00-4 HCAPLUS

CN Glycine, N,N'-1,2-ethanediyldis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



L114 ANSWER 17 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:862795 HCAPLUS

DN 139:356053

TI Acetylenic diol **surfactant** solutions and methods of using same

IN Zhang, Peng; King, Danielle Megan; Karwacki, Eugene Joseph; Barber, Leslie
Cox

PA Air Products and Chemicals, Inc., USA

SO U.S., 9 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6641986	B1	20031104	US 2002-218068	<u>20020812</u>
	US 2004053172	A1	20040318	US 2003-634608	20030804
	EP 1389745	A1	20040218	EP 2003-17569	20030807
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2004094241	A2	20040325	JP 2003-292443	20030812
PRAI	US 2002-218068	A2	20020812		
	US 2003-634608	A	20030804		

OS MARPAT 139:356053

AB The present invention relates to a method for **semiconductor** device fabrication, including an aqueous soln for **treating** the surface of a substrate. Aqueous solns comprising one or more acetylenic diol type **surfactants** are used to improve the wettability of a substrate surface by lowering the contact angle of the aqueous developer solution are enclosed herein. In one embodiment, the aqueous solution is used to prepare the surface of the substrate prior to development of the resist coating layer.

IC ICM G03F007-30

ICS G03F007-38; C11D017-00; B01D012-00; B01F017-00

NCL 430325000; 430271100; 430327000; 430331000; 510175000; 510176000; 510421000; 516204000; 568616000; 568855000

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 76

ST **semiconductor** device fabrication acetylenic diol **surfactant** soln resist

IT **Semiconductor** device fabrication
(acetylenic diol **surfactant** solns. for surface **treatment** for)

IT Surface **treatment**
Surfactants

(acetylenic diol **surfactant** solns. for surface **treatment** for **semiconductor** device fabrication)

IT 169117-72-0, Dynol 604 550347-67-6,
Surfynol 2502

RL: TEM (Technical or engineered material use); USES (Uses)

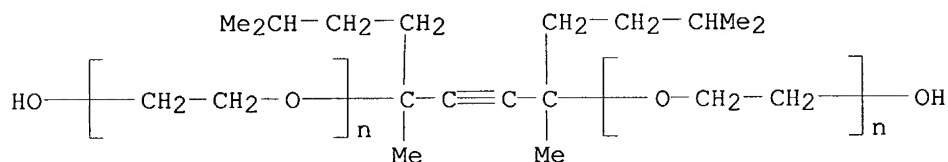
(acetylenic diol **surfactant** solns. for surface treatment for **semiconductor** device fabrication)

IT 169117-72-0, Dynol 604 550347-67-6, Surfynol 2502

RL: TEM (Technical or engineered material use); USES (Uses)
(acetylenic diol **surfactant** solns. for surface treatment for **semiconductor** device fabrication)

RN 169117-72-0 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(3-methylbutyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



RN 550347-67-6 HCAPLUS

CN Surfynol 2502 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 18 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:717738 HCAPLUS

DN 139:232219

TI Methods and compositions for chemically treating a substrate using foam technology

IN Patel, Bakul P.; Cernat, Mihaela Anca-mac; Small, Robert J.

PA USA

SO U.S. Pat. Appl. Publ., 28 pp.
CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	US 2003171239	A1	20030911	US 2002-60109	20020128
PRAI	US 2002-60109		20020128		

OS MARPAT 139:232219

AB A method for treating a surface of a substrate by foam technol., particularly in removing undesired matter from the surface of substrates with small features, where such undesired matter may comprise organic and inorg. compds. such as particles, films from photoresist material, and traces of any other impurities such as metals deposited during **planarization** or etching, comprises generating a foam from a liquid composition, wherein the liquid composition comprises a gas; a **surfactant**; and at least one component selected from the group consisting of a fluoride, a hydroxylamine, an amine and periodic acid; contacting the foam with the surface of a substrate; and, removing the undesired matter from the surface of the substrate.

IC ICM C11D017-00

NCL 510406000; 510412000; 510499000; 510411000

CC 46-6 (Surface Active Agents and Detergents)
Section cross-reference(s): 76

ST surface cleaning foam fluoride hydroxylamine amine periodic acid
 IT Oximes
 RL: TEM (Technical or engineered material use); USES (Uses)
 (chelating agent; methods and compns. for chemical treating a substrate using foam technol.)

IT Detergents
 (cleaning compns.; methods and compns. for chemical treating a substrate using foam technol.)

IT Air
 Integrated circuits
 Photoresists
Semiconductor devices
 (methods and compns. for chemical treating a substrate using foam technol.)

IT Lactams
 RL: NUU (Other use, unclassified); USES (Uses)
 (methods and compns. for chemical treating a substrate using foam technol.)

IT Micromachines
 (microelectromech. devices; methods and compns. for chemical treating a substrate using foam technol.)

IT 50-21-5, Lactic acid, uses 60-00-4, Ethylenediaminetetraacetic acid, uses 69-72-7, Salicylic acid, uses 94-67-7, Salicylaldoxime 148-24-3, 8-Hydroxy quinoline, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (chelating agent; methods and compns. for chemical treating a substrate using foam technol.)

IT 87-66-1, Pyrogallol 95-14-7, 1H-Benzotriazole 120-80-9, Catechol, uses 149-91-7, Gallic acid, uses 27213-78-1, tert-Butyl catechol
 RL: TEM (Technical or engineered material use); USES (Uses)
 (corrosion inhibitor; methods and compns. for chemical treating a substrate using foam technol.)

IT 13444-71-8, Periodic acid
 RL: TEM (Technical or engineered material use); USES (Uses)
 (etchant; methods and compns. for chemical treating a substrate using foam technol.)

IT 57-55-6, Propylene glycol, uses 67-68-5, Dimethyl sulfoxide, uses 68-12-2, Di(methyl)formamide, uses 96-49-1, Ethylene carbonate 97-64-3, Ethyl lactate 107-15-3, Ethylene diamine, uses 108-32-7, Propylene carbonate 109-83-1, 2-Methylamino ethanol 127-19-5, Di(methyl)acetamide 138-22-7, Butyl lactate 141-43-5, Monoethanolamine, uses 616-09-1, Propyl lactate 931-20-4, N-Methyl piperidone 3445-11-2, N-(2-Hydroxyethyl)-2-pyrrolidone 4789-07-5, 2-Piperidinone, 1-ethyl- 7803-49-8, Hydroxylamine, uses 27154-43-4D, Piperidone, derivative 34590-94-8, Di(propylene glycol)monomethyl ether 44170-50-5, Ethylene triamine 91448-41-8 189824-37-1, 2-Piperidinone, 1-Methoxy- 321746-32-1, 2-Piperidinone, dimethoxy- 321746-33-2 321746-34-3, 2-Piperidinone, diethoxy-
 RL: NUU (Other use, unclassified); USES (Uses)
 (methods and compns. for chemical treating a substrate using foam technol.)

IT 50-81-7, Ascorbic acid, uses 62-49-7D, Choline, derivative 62-49-7D, Choline, optionally derivative 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses 65-85-0, Benzoic acid, uses 75-59-2, Tetramethylammonium hydroxide 77-92-9, Citric acid, uses 78-73-9, Choline bicarbonate 79-09-4, Propionic acid, uses 79-31-2, Iso-butyric acid 87-69-4, Tartaric acid, uses 96-48-0 107-92-6, n-Butyric acid, uses 110-15-6, Succinic acid, uses 110-91-8, Morpholine, uses 111-40-0, Di(ethylene triamine) 112-24-3, Tri(ethylene)tetramine 123-41-1, Choline

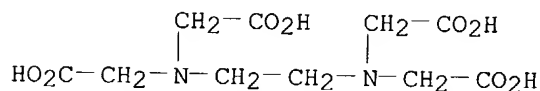
hydroxide 124-38-9, Carbon dioxide, uses 141-82-2, Malonic acid, uses 144-62-7, Oxalic acid, uses 302-01-2, Hydrazine, uses 526-95-4, Gluconic acid 872-50-4, N-Methyl pyrrolidone, uses 929-06-6, Diglycol amine 1310-58-3, Potassium hydroxide, uses 1310-73-2, Sodium hydroxide, uses 1336-21-6, Ammonium hydroxide 1341-49-7, Ammonium bifluoride 3710-84-7, Di(ethyl)hydroxylamine 5080-22-8, Isopropyl hydroxylamine 6915-15-7, Malic acid 7440-37-1, Argon, uses 7440-59-7, Helium, uses 7664-39-3, Hydrogen fluoride, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses 10028-15-6, Ozone, uses 12125-01-8, Ammonium fluoride 33667-48-0, Tris(2-hydroxyethyl)methylammonium hydroxide 56742-57-5, Bis(2-hydroxyethyl)dimethylammonium hydroxide 376354-25-5, EKC 640 444885-10-3, EKC 640D 573672-43-2, EKC 6800

RL: TEM (Technical or engineered material use); USES (Uses)
(methods and compns. for chemical treating a substrate using foam technol.)

IT 60-00-4, Ethylenediaminetetraacetic acid, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(chelating agent; methods and compns. for chemical treating a substrate using foam technol.)

RN 60-00-4 HCAPLUS

CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)

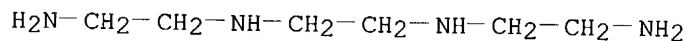


IT 112-24-3, Tri(ethylene)tetramine

RL: TEM (Technical or engineered material use); USES (Uses)
(methods and compns. for chemical treating a substrate using foam technol.)

RN 112-24-3 HCAPLUS

CN 1,2-Ethanediamine, N,N'-bis(2-aminoethyl)- (9CI) (CA INDEX NAME)



L114 ANSWER 19 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:610574 HCAPLUS

DN 139:158361

TI Methods and compositions for chemically cleaning a substrate using foam technology

IN Patel, Bakul P.; Cernat, Mihaela; Small, Robert J.

PA EKC Technology, Inc., USA

SO PCT Int. Appl., 64 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003064581	A1	20030807	WO 2002-US3233	20020128
	WO 2003064581	C1	20031127		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,

GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,
UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,
CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI WO 2002-US3233

20020128

OS MARPAT 139:158361

AB The present invention relates to methods and compns. for treating a surface of a substrate by foam technol. that includes at least one treatment chemical. The invention more particularly relates to the removal of undesired matter from the surface of substrates with small features, where such undesired matter may comprise organic and inorg. compds. such as particles, films from photoresist material, and traces of any other impurities such as metals deposited during **planarization** or etching. A method accordingly for treating a surface of a substrate, comprises the following steps: (1) generating a foam from a liquid composition, wherein the liquid composition comprises a gas; a **surfactant**; and at least one component selected from the group consisting of a fluoride compound that is free of both of organoammonium and amine carboxylate compds., a hydroxylamine, an amine and periodic acid; (2) contacting the foam with the surface of a substrate; (3) removing the undesired matter from the surface of the substrate.

IC ICM C11D003-02

ICS C11D003-43; C11D003-20

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 46

ST fluoride gas **surfactant** foam compn; periodic acid gas
surfactant foam compn; post etch residue removal aq cleaner; foam
aq cleaner **semiconductor** device; hydroxylamine alkanolamine gas
surfactant foam compn

IT **Surfactants**

(amphoteric; methods and compns. for chemical cleaning a substrate using
foam technol.)

IT **Surfactants**

(anionic; methods and compns. for chemical cleaning a substrate using foam
technol.)

IT **Surfactants**

(cationic; methods and compns. for chemical cleaning a substrate using
foam technol.)

IT Oximes

RL: TEM (Technical or engineered material use); USES (Uses)

(chelating agent; methods and compns. for chemical cleaning a substrate
using foam technol.)

IT Air

Chelating agents

Foams

Integrated circuits

(methods and compns. for chemical cleaning a substrate using foam
technol.)

IT Lactams

RL: NUU (Other use, unclassified); USES (Uses)

(methods and compns. for chemical cleaning a substrate using foam
technol.)

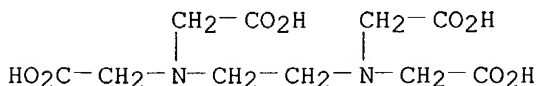
IT Micromachines

(microelectromech. devices; methods and compns. for chemical cleaning a
substrate using foam technol.)

IT **Surfactants**

- (nonionic; methods and compns. for chemical cleaning a substrate using foam technol.)
- IT Photoresists
(removal of; methods and compns. for chemical cleaning a substrate using foam technol.)
- IT **Surfactants**
(silicone based; methods and compns. for chemical cleaning a substrate using foam technol.)
- IT **Semiconductor devices**
(wafer; methods and compns. for chemical cleaning a substrate using foam technol.)
- IT 50-21-5, Lactic acid, uses **60-00-4**, Ethylenediaminetetraacetic acid, uses 69-72-7, Salicylic acid, uses 94-67-7, Salicylaldehyde, 148-24-3, 8-Hydroxy quinoline, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(chelating agent; methods and compns. for chemical cleaning a substrate using foam technol.)
- IT 87-66-1, Pyrogallol 95-14-7, 1H-Benzotriazole 120-80-9, Catechol, uses 149-91-7, Gallic acid, uses 27213-78-1, tert-Butyl catechol
RL: TEM (Technical or engineered material use); USES (Uses)
(corrosion inhibitor; methods and compns. for chemical cleaning a substrate using foam technol.)
- IT 57-55-6, Propylene glycol, uses 67-68-5, Dimethyl sulfoxide, uses 68-12-2, Di(methyl)formamide, uses 96-48-0 96-49-1, Ethylene carbonate 97-64-3, Ethyl lactate 107-15-3, Ethylene diamine, uses 108-32-7, Propylene carbonate 127-19-5, Di(methyl)acetamide 138-22-7, Butyl lactate 616-09-1, Propyl lactate 616-45-5D, Pyrrolidone, N-substituted 872-50-4, N-Methyl pyrrolidone, uses 931-20-4, N-Methyl piperidone 3445-11-2, N-(2-Hydroxyethyl)-2-pyrrolidone 4789-07-5 34590-94-8, Di(propyleneglycol)monomethyl ether 44170-50-5, Ethylene triamine 91448-41-8 321746-33-2
RL: NUU (Other use, unclassified); USES (Uses)
(methods and compns. for chemical cleaning a substrate using foam technol.)
- IT 50-81-7, Ascorbic acid, uses 62-49-7D, Choline, optionally derivative 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses 65-85-0, Benzoic acid, uses 75-59-2, Tetramethylammonium hydroxide 77-92-9, Citric acid, uses 78-73-9, Choline bicarbonate 79-09-4, Propionic acid, uses 79-31-2, Iso-butyric acid 87-69-4, Tartaric acid, uses 107-92-6, n-Butyric acid, uses 109-83-1 110-15-6, Succinic acid, uses 110-91-8, Morpholine, uses 111-40-0, Di(ethylene triamine) **112-24-3**, Tri(ethylene)tetramine 123-41-1, Choline hydroxide 123-41-1D, Trimethyl(2-hydroxyethyl)ammonium hydroxide, optionally derivative 124-38-9, Carbon dioxide, uses 141-43-5, Monoethanolamine, uses 141-82-2, Malonic acid, uses 144-62-7, Oxalic acid, uses 302-01-2D, Hydrazine, optionally salts 526-95-4, Gluconic acid 929-06-6, Diglycol amine 1310-58-3, Potassium hydroxide, uses 1310-73-2, Sodium hydroxide, uses 1336-21-6, Ammonium hydroxide 1341-49-7, Ammonium bifluoride 3710-84-7, Di(ethyl)hydroxylamine 5080-22-8, Isopropyl hydroxylamine 6915-15-7, Malic acid 7440-37-1, Argon, uses 7440-59-7, Helium, uses 7664-39-3, Hydrogen fluoride, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses 10028-15-6, Ozone, uses 12125-01-8, Ammonium fluoride 13444-71-8, Periodic Acid 33667-48-0, Tris(2-hydroxyethyl)methylammonium hydroxide 56742-57-5, Bis(2-hydroxyethyl)dimethylammonium hydroxide 376354-25-5, EKC 640 444885-10-3, EKC 640D 573672-43-2, EKC 6800
RL: TEM (Technical or engineered material use); USES (Uses)
(methods and compns. for chemical cleaning a substrate using foam technol.)

IT **60-00-4**, Ethylenediaminetetraacetic acid, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (chelating agent; methods and compns. for chemical cleaning a substrate
 using foam technol.)
 RN 60-00-4 HCAPLUS
 CN Glycine, N,N'-1,2-ethanediybis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



IT **112-24-3**, Tri(ethylene)tetramine
 RL: TEM (Technical or engineered material use); USES (Uses)
 (methods and compns. for chemical cleaning a substrate using foam
 technol.)
 RN 112-24-3 HCAPLUS
 CN 1,2-Ethanediamine, N,N'-bis(2-aminoethyl)- (9CI) (CA INDEX NAME)



RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 20 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:532728 HCAPLUS
 DN 139:88960
 TI Formaldehyde-based abrasive resin compositions for removal of Cu, Ta and
 silica by **chemical-mechanical** polishing to reduce
 surface roughness
 IN Li, Yuzhuo; Bian, Guomin; Tang, Kwok; Zhao, Joe Zunzi; Westbrook, John;
 Lin, Yong; Chan, Leina
 PA Dynea Canada, Ltd., Can.
 SO PCT Int. Appl., 41 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 1

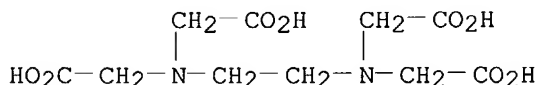
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003055958	A1	20030710	WO 2002-US40520	20021219
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	US 2003136055	A1	20030724	US 2001-23827	20011221
	US 6620215	B2	20030916		
PRAI	US 2001-23827	A	20011221		
AB	Copper, tantalum and silica are removed from articles (such as				

- semiconductors**) by **chemical mech.** polishing (**CMP**) and **planarization** using compns. containing abrasive particles comprised of an organic resin based on formaldehyde, melamine, urea and/or phenol derivs. The abrasive compns. are aqueous slurries comprising abrasive particles and additives such as **surfactants**, oxidizing agents, chelating agents or passivation agents, the slurries being held at pH 2-12. The compns. can be tailored to selectively remove components from the surface. The abrasive compns. provides efficient polishing rates and good surface quality in **CMP** applications.
- IC ICM C09K003-14
ICS C09G001-02; H01L021-306; H01L021-321
- CC 57-7 (Ceramics)
Section cross-reference(s): 38, 76
- ST formaldehyde urea melamine phenol resin abrasive compn polishing
semiconductor
- IT Aminoplasts
Phenolic resins, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(abrasive resin particles; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT Carboxylic acids, uses
RL: MOA (Modifier or additive use); USES (Uses)
(alkyl- and aryl- derivs., **surfactants**; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chem.-mech.** polishing to reduce surface roughness)
- IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(alkylated, **surfactants**; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT Halogen compounds
RL: MOA (Modifier or additive use); USES (Uses)
(bromites, oxidants; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT Amino acids, uses
Polyamines
RL: MOA (Modifier or additive use); USES (Uses)
(chelating agent; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT Polishing
(**chemical-mech.**; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT Abrasives
Grinding (size reduction)
Hardness (mechanical)
Particle size
Semiconductor materials
Surface roughness
(formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT Chelating agents
Oxidizing agents
Surfactants

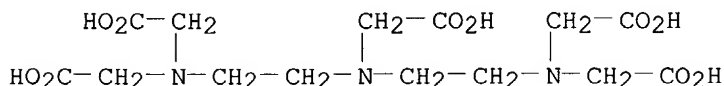
- (in formaldehyde-based resin; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT Rubber, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (in formaldehyde-based resin; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT Phenols, processes
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
 (in resin binder; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT Bromates
 Chlorates
 Chlorites
 Hypochlorites
 Nitrates, uses
 Perchlorates
 Peroxides, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (oxidants; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT Polyamides, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (poly(amino acids), chelating agent; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT Sulfates, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (**surfactants**; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT Plastics, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (thermoplastics, in formaldehyde-based resin; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chem-mech.** polishing to reduce surface roughness)
- IT 409-21-2, Silicon carbide (SiC), processes 1306-38-3, Cerium oxide (CeO₂), processes 1309-37-1, Ferric oxide, processes 1314-23-4, Zirconium oxide (ZrO₂), processes 1344-28-1, Alumina, processes 7782-40-3, Diamond, processes 12033-89-5, Silicon nitride (Si₃N₄), processes 13463-67-7, Titanium oxide (TiO₂), processes
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
 (abrasive particles; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT 9003-08-1, Formaldehyde-melamine polymer 9003-35-4, Formaldehyde-phenol polymer 25036-13-9, Urea-formaldehyde-melamine polymer 25917-04-8, Formaldehyde-melamine-phenol polymer
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
 (abrasive resin particles; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT 64-17-5, Ethanol, uses 107-21-1, Ethylene glycol, uses 631-61-8,

- Ammonium acetate 7783-20-2, Ammonium sulfate, uses 8062-15-5, Lignin sulfonate 9003-01-4, Polyacrylic acid 9004-32-4, Carboxymethylcellulose 9004-34-6, Cellulose, uses 9004-62-0, Hydroxyethyl cellulose 10377-60-3, Magnesium nitrate 12125-02-9, Ammonium chloride, uses 62309-51-7, Propanol
RL: MOA (Modifier or additive use); USES (Uses)
(additives; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT 56-40-6, Glycine, uses 60-00-4, Ethylenediamine-tetraacetic acid, uses 67-43-6, Diethylenetriaminepentaacetic acid 107-15-3, Ethylenediamine, uses 111-40-0, Diethylenetriamine 139-13-9, Nitrilotriacetic acid 366-18-7, 2,2'-Bipyridine
RL: MOA (Modifier or additive use); USES (Uses)
(chelating agent; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT 50-00-0D, Formaldehyde, derivs. 57-13-6D, Urea, derivs. 108-46-3D, Resorcinol, derivs. 108-78-1D, Melamine, derivs.
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(in resin binder; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT 64-19-7, Acetic acid, uses 7722-84-1, Hydrogen peroxide (H2O2), uses 7727-21-1, Potassium peroxydisulfate (K2S2O8) 7758-05-6 10294-64-1, Manganese potassium oxide (MnK2O4) 10421-48-4, Iron nitrate (Fe(NO3)3)
RL: MOA (Modifier or additive use); USES (Uses)
(oxidants; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT 102-71-6, Triethanolamine, processes 111-46-6, Diethylene glycol, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(precursor; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT 7631-86-9, Silica, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); REM (Removal or disposal); PROC (Process)
(removal from substrates; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT 7440-25-7, Tantalum, processes 7440-50-8, Copper, processes
RL: REM (Removal or disposal); PROC (Process)
(removal from substrates; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT 69364-63-2, Arlasolve 200L
RL: MOA (Modifier or additive use); USES (Uses)
(**surfactant**; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.** polishing to reduce surface roughness)
- IT 9002-89-5D, Polyvinyl alcohol, alkylated 9004-34-6D, Cellulose, alkylated 25322-68-3D, Polyethylene oxide, alkylated
RL: MOA (Modifier or additive use); USES (Uses)
(**surfactants**; formaldehyde-based abrasive resin compns. for removal of Cu, Ta and silica by **chemical-mech.**

polishing to reduce surface roughness)
 IT 60-00-4, Ethylenediamine-tetraacetic acid, uses 67-43-6,
 Diethylenetriaminepentaacetic acid
 RL: MOA (Modifier or additive use); USES (Uses)
 (chelating agent; formaldehyde-based abrasive resin comps. for removal
 of Cu, Ta and silica by **chemical-mech.** polishing to
 reduce surface roughness)
 RN 60-00-4 HCAPLUS
 CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



RN 67-43-6 HCAPLUS
 CN Glycine, N,N-bis[2-[bis(carboxymethyl)amino]ethyl]- (7CI, 8CI, 9CI) (CA INDEX NAME)



RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 21 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:512000 HCAPLUS
 DN 139:61476
 TI Supercritical fluid-assisted deposition of materials on
semiconductor substrates
 IN Xu, Chongying; Baum, Thomas H.
 PA USA
 SO U.S. Pat. Appl. Publ., 10 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003124785	A1	20030703	US 2002-303479	20021125
	WO 2003058680	A2	20030717	WO 2002-US40047	20021213
	WO 2003058680	A3	20040624		
	W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	US 2004023453	A1	20040205	US 2003-632009	20030731
PRAI	US 2001-345738P	P	20011231		
	US 2002-303479	A	20021125		

AB The present invention relates generally to using supercrit. fluids to

effect the deposition of materials on substrates, e.g., **semiconductor** substrates, in the manufacture of **semiconductor** devices and device precursor structures. The deposition is effected using a supercrit. fluid-based composition containing the precursor(s) of the material to

be deposited on the substrate surface. Such approach permits use of precursors that otherwise would be wholly unsuitable for deposition applications, as lacking requisite volatility and transport characteristics for vapor phase deposition processes.

IC ICM H01L021-8238

NCL 438200000

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 75

ST supercrit fluid assisted chem vapor deposition **semiconductor** material

IT Ketones, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(1,3-diketones, metal complexes, vapor deposition precursor; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)

IT Vapor deposition process

(chemical; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)

IT Alcohols, processes

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(reducing agent; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)

IT Diffusion barrier

Interconnections, electric

Semiconductor materials

Supercritical fluids

Surfactants

(supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)

IT Lewis bases

RL: RCT (Reactant); RACT (Reactant or reagent)

(vapor deposition precursor; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)

IT 67-68-5, Dimethyl sulfoxide, processes 96-48-0, γ -Butyrolactone
96-49-1, Ethylene carbonate 97-64-3, Ethyl lactate 108-32-7, Propylene carbonate 112-34-5, Butyl carbitol 120-80-9, Catechol, processes
126-33-0, Sulfolane 141-43-5, Monoethanolamine, processes 872-50-4, N-Methylpyrrolidone, processes 929-06-6, Diglycol amine 2687-94-7, N-Octylpyrrolidone 4437-85-8, Butylene carbonate 4641-57-0

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(cosolvent; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)

IT 12033-62-4, Tantalum nitride (TaN) 12058-38-7, Tungsten nitride (WN)

12627-41-7, Tungsten silicide 12738-91-9, Titanium silicide

24621-21-4, Niobium nitride (NbN) 25583-20-4, Titanium nitride (TiN)

39336-13-5, Niobium silicide 52953-72-7, Tantalum silicide

RL: DEV (Device component use); USES (Uses)

(diffusion barrier; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)

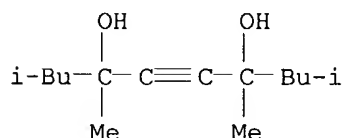
IT 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses

RL: DEV (Device component use); USES (Uses)

(interconnection; supercrit. fluid-assisted deposition of materials on

- semiconductor** substrates)
- IT 50-00-0, Formaldehyde, processes
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(reducing agent; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)
- IT 67-63-0, Isopropanol, processes
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(supercrit. fluid, cosolvent, reducing agent; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)
- IT 64-17-5, Ethanol, processes 67-56-1, Methanol, processes 67-64-1, Dimethyl ketone, processes
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(supercrit. fluid, cosolvent; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)
- IT 1333-74-0, Hydrogen, processes
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(supercrit. fluid, reducing agent; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)
- IT 74-82-8, Methane, processes 74-84-0, Ethane, processes 124-38-9, Carbon dioxide, processes 630-08-0, Carbon monoxide, processes 2551-62-4, Sulfur hexafluoride 7439-90-9, Krypton, processes 7440-37-1, Argon, processes 7440-63-3, Xenon, processes 7664-41-7, Ammonia, processes 7782-44-7, Oxygen, processes 10024-97-2, Nitrous oxide, processes 151528-68-6, Carbon monoxide, mixture with hydrogen
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(supercrit. fluid; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)
- IT 126-86-3, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol 52187-77-6, 1-Hexyn-3-ol, 3,4-dimethyl-
RL: NUU (Other use, unclassified); USES (Uses)
(**surfactant**; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)
- IT 64-18-6D, Formic acid, metal complexes with 64-19-7D, Acetic acid, metal complexes with 75-76-3, Tetramethylsilane 109-89-7D, Ethanamine, N-ethyl-, Nb and W salts 124-40-3D, Methanamine, N-methyl-, Nb and W salts 142-71-2, Acetic acid, Copper(2+) salt 544-19-4, Formic acid, copper(2+) salt 556-67-2, Octamethylcyclotetrasiloxane 993-07-7, Trimethylsilane 2370-88-9, Tetramethylcyclotetrasiloxane 3275-24-9, Tetrakis dimethylamino titanium 4419-47-0, Tetrakis diethylamido titanium 13395-16-9, Copper bis(acetylacetonate) 14040-05-2, Copper, bis(2,2,6,6-tetramethyl-3,5-heptanedionato- $\kappa O, \kappa O'$)- 18206-43-4, Copper pentafluorophenyl 19824-59-0 55161-66-5, Pentakis diethylamido tantalum 89989-42-4, Copper, [(1,2,3,4,5- η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl](trimethylphosphine)- 94042-27-0, Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-, copper(2+) salt 97373-71-2, Copper, bis(2,2,7-trimethyl-3,5-octanedionato-O,O')-, (SP-4-2)- 284468-51-5, Pentakis ethylmethyldiamido tantalum
RL: RCT (Reactant); RACT (Reactant or reagent)
(vapor deposition precursor; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)
- IT 126-86-3, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol
RL: NUU (Other use, unclassified); USES (Uses)
(**surfactant**; supercrit. fluid-assisted deposition of materials on **semiconductor** substrates)

RN 126-86-3 HCAPLUS
 CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L114 ANSWER 22 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:507628 HCAPLUS
 DN 139:61334
 TI Stabilized alkaline compositions for **cleaning** of microelectronic substrates
 IN Skee, David C.
 PA Mallinckrodt Inc., USA
 SO U.S., 14 pp., Cont.-in-part of Appl. No. PCT/US99/10875.
 CODEN: USXXAM
 DT Patent
 LA English
 FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6585825	B1	20030701	US 2000-688559	<u>20001016</u>
	WO 9960448	A1	19991125	WO 1999-US10875	19990517
	W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	US 2002077259	A1	20020620	US 2001-859142	20010516
	US 6599370	B2	20030729		
	WO 2002033033	A1	20020425	WO 2001-US42406	20010928
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	AU 2001096947	A5	20020429	AU 2001-96947	20010928
	EP 1326951	A1	20030716	EP 2001-977863	20010928
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			
	JP 2004511917	T2	20040415	JP 2002-536403	20010928
PRAI	US 1998-85861P	P	19980518		
	US 1999-115084P	P	19990107		
	WO 1999-US10875	A2	19990517		
	US 1998-85681P	P	19980518		

US 2000-688559 A2 20001016

US 2001-859142 A 20010516

WO 2001-US42406 W 20010928

AB This invention relates to compns. useful in the microelectronics industry for **cleaning semiconductor** wafer substrates. Particularly, this invention relates to alkaline stripping or **cleaning** compns. containing bath stabilizing agents that are used for **cleaning** wafers having metal lines and vias by removing metallic and organic contamination without damaging the integrated circuits. The compns. typically contain (a) ≥ 1 metal ion-free bases at sufficient amts. to produce a pH of .apprx.11-13 and ≥ 1 bath stabilizing agents to maintain this pH during use; (b) optionally, .apprx.0.01% to .apprx.5% by weight (expressed as % SiO₂) of a H₂O-soluble metal ion-free silicate; (c) optionally, .apprx.0.01% to .apprx.10% by weight of ≥ 1 chelating agents; (d) optionally, .apprx.0.01% to .apprx.80% by weight of ≥ 1 H₂O-soluble organic cosolvents; and (e) optionally, .apprx.0.01% to .apprx.1%

by weight of a H₂O-soluble **surfactant**.

IC ICM C23G001-02

NCL 134003000; 134002000; 134010000; 134034000; 252079100; 252079500; 252102000; 252156000

CC 76-3 (Electric Phenomena)

ST alk **cleaning** soln microelectronic substrate

IT Metal lines

Semiconductor materials

(**cleaning** of; stabilized alkaline compns. for **cleaning** of microelectronic substrates)

IT Quaternary ammonium compounds, uses

RL: NUU (Other use, unclassified); USES (Uses)

(**cleaning** solution base; stabilized alkaline compns. for **cleaning** of microelectronic substrates)

IT Chelating agents

Surfactants

(**cleaning** solns. containing; stabilized alkaline compns. for **cleaning** of microelectronic substrates)

IT Bases, uses

RL: NUU (Other use, unclassified); USES (Uses)

(**cleaning** solns.; stabilized alkaline compns. for **cleaning** of microelectronic substrates)

IT Solvents

(cosolvents, **cleaning** solns. containing; stabilized alkaline compns. for **cleaning** of microelectronic substrates)

IT **Cleaning**

(of **semiconductor** materials; stabilized alkaline compns. for **cleaning** of microelectronic substrates)

IT Alcohols, uses

RL: NUU (Other use, unclassified); USES (Uses)

(polyhydric, cosolvent; stabilized alkaline compns. for **cleaning** of microelectronic substrates)

IT Contamination (electronics)

(removal of; stabilized alkaline compns. for **cleaning** of microelectronic substrates)

IT Integrated circuits

Stabilizing agents

(stabilized alkaline compns. for **cleaning** of microelectronic substrates)

IT Interconnections, electric

(via, **cleaning** of; stabilized alkaline compns. for **cleaning** of microelectronic substrates)

- IT 50-81-7, Ascorbic acid, uses 50-99-7, Glucose, uses 51-17-2, Benzimidazole 56-03-1, Biguanide 57-48-7, Fructose, uses 58-61-7, Adenosine, uses 58-63-9, Inosine 58-86-6, Xylose, uses 59-23-4, Galactose, uses 59-31-4, 2-Hydroxyquinoline 65-42-9, Lyxose 65-46-3, Cytidine 68-94-0, Hypoxanthine 69-72-7, Salicylic acid, uses 69-89-6 71-30-7, Cytosine 73-40-5, Guanine 74-79-3, Arginine, uses 75-89-8 80-15-9, Cumene hydroperoxide 87-66-1, Pyrogallol 87-79-6, Sorbose 90-39-1, Sparteine 94-67-7, 2-Hydroxybenzaldehyde oxime 95-71-6, Toluhydroquinone 96-29-7, Ethyl methyl ketoxime 97-05-2, Sulfosalicylic acid 97-23-4, 2,2'-Methylenebis(4-chlorophenol) 99-50-3, 3,4-Dihydroxybenzoic acid 108-46-3, Resorcinol, uses 115-20-8, Trichloroethanol 118-00-3, Guanosine, uses 123-31-9, Hydroquinone, uses 127-06-0, Acetone oxime 142-08-5, 2-Hydroxypyridine 143-37-3, Acetamidine 146-80-5, Xanthosine 147-81-9, Arabinose 154-17-6, 2-Deoxyglucose 613-94-5, Benzoylhydrazine 657-24-9, Dimethylbiguanide 826-81-3, 2-Methyl-8-hydroxyquinoline 872-85-5, Pyridine-4-aldehyde 1058-92-0, Chrome dark blue 1238-09-1 1343-98-2, Silicic acid 1667-99-8, Chrome azurol S 2086-83-1, Berberine 3147-14-6, Calmagite 3458-28-4, Mannose 3688-92-4, Thorin 3846-73-9, 4-Methyl-8-hydroxyquinoline 5370-56-9 5817-92-5, Benzoylpyruvic acid 6136-37-4, 1-Methylxanthine 7664-38-2, Phosphoric acid, uses 7722-84-1, Hydrogen peroxide, uses 15021-18-8, Germanic acid 15761-67-8, Ribofuranose 22004-17-7, 1H-Imidazole-4-ethanamine-5-iodo 23873-81-6, Benzil- α -dioxime 41283-85-6, Ethylbiguanide 70904-56-2 71255-09-9, 3-Formyl-2-methoxypyridine 102374-28-7, 2-Pyrroline, 2-Butyl, 1-methyl-
- RL: NUU (Other use, unclassified); USES (Uses)
(bath stabilizing agent; stabilized alkaline compns. for **cleaning** of microelectronic substrates)
- IT 60-00-4, (Ethylenedinitrilo)tetraacetic acid, uses 67-43-6, Diethylenetriaminepentaacetic acid 869-52-3, Triethylenetetraminehexaacetic acid 1429-50-1 3148-72-9, 1,3-Diamino-2-hydroxypropane-N,N,N',N'-tetraacetic acid 13291-61-7, trans-(1,2-Cyclohexylenedinitrilo)tetraacetic acid
- RL: NUU (Other use, unclassified); USES (Uses)
(chelating agent; stabilized alkaline compns. for **cleaning** of microelectronic substrates)
- IT 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses
- RL: TEM (Technical or engineered material use); USES (Uses)
(**cleaning** of; stabilized alkaline compns. for **cleaning** of microelectronic substrates)
- IT 62-49-7, Choline 75-59-2, Tetramethylammonium hydroxide 77-98-5, Tetraethylammonium hydroxide 631-41-4, Tetraethanolammonium hydroxide 2052-49-5, Tetrabutylammonium hydroxide 4499-86-9, Tetrapropylammonium hydroxide 33667-48-0, Monomethyltriethanolammonium hydroxide 109334-81-8, Methyltriethylammonium hydroxide
- RL: NUU (Other use, unclassified); USES (Uses)
(**cleaning** solution base; stabilized alkaline compns. for **cleaning** of microelectronic substrates)
- IT 53116-81-7, Tetramethylammonium silicate
- RL: NUU (Other use, unclassified); USES (Uses)
(**cleaning** solution containing; stabilized alkaline compns. for **cleaning** of microelectronic substrates)
- IT 9014-85-1, Surfynol 465
- RL: NUU (Other use, unclassified); USES (Uses)
(**cleaning** solution **surfactant**; stabilized alkaline compns. for **cleaning** of microelectronic substrates)
- IT 616-45-5D, 2-Pyrrolidinone, 1-hydroxyalkyl derivs.
- RL: NUU (Other use, unclassified); USES (Uses)

(cosolvent; stabilized alkaline comps. for **cleaning** of microelectronic substrates)

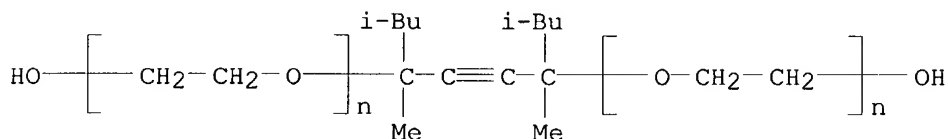
IT 9014-85-1, Surfynol 465

RL: NUU (Other use, unclassified); USES (Uses)

(**cleaning** solution **surfactant**; stabilized alkaline comps. for **cleaning** of microelectronic substrates)

RN 9014-85-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α,α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 23 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:492279 HCAPLUS

DN 139:75367

TI Electrolyte composition and treatment for electrolytic chemical mechanical polishing

IN Duboust, Alain; Sun, Lizhong; Liu, Feng Q.; Wang, Yuchun; Wang, Yan; Neo, Siew; Chen, Liang-Yuh

PA USA

SO U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 19

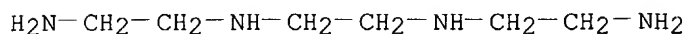
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003116446	A1	20030626	US 2001-32275	20011221
	US 2003116445	A1	20030626	US 2002-141459	20020507
	WO 2003060962	A2	20030724	WO 2002-US40754	20021220
	WO 2003060962	A3	20031016		
	W: CN, JP, KR, SG				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR				
	US 2003178320	A1	20030925	US 2003-378097	20030226
	US 2003216045	A1	20031120	US 2003-455861	20030606
	US 2003234184	A1	20031225	US 2003-456220	20030606
	US 2004053499	A1	20040318	US 2003-608404	20030626
PRAI	US 2001-275874P	P	20010314		
	US 2001-32275	A2	20011221		
	US 2002-38066	A2	20020103		
	US 2002-359746P	P	20020226		
	US 2003-378097	A2	20030226		

AB An electrolyte composition and method for **planarizing** a surface of a wafer using the electrolyte composition is provided. In one aspect, the electrolyte composition includes ammonium dihydrogen phosphate, diammonium hydrogen phosphate, or a mixture thereof. The composition has a pH between about

3 and about 10 which is environmentally friendly and does not present

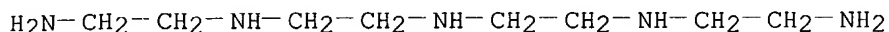
hazardous operation concerns. The composition may further comprise one or more additives selected from a group consisting of benzotriazole, ammonium citrate, ethylenediamine, tetraethylenepentamine, triethylenetetramine, diethylenetriamine, amino acids, ammonium oxalate, ammonia, ammonium succinate, and citric acid.

IC ICM C25F003-00
NCL 205682000; 205684000
CC 72-7 (Electrochemistry)
Section cross-reference(s): 47
ST electrolyte compn chem mech polishing **semiconductor** device
IT Polishing
(chemical-mech., electrochem.; electrolyte for electrolytic chemical mech. polishing)
IT Amino acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(electrolyte for electrolytic chemical mech. polishing containing)
IT **Semiconductor** devices
(electrolyte for electrolytic chemical mech. polishing for use in fabrication of)
IT Electrolytes
(for electrolytic chemical mech. polishing)
IT pH
(of electrolyte for electrolytic chemical mech. polishing)
IT Composition
(of electrolyte for electrolytic chemical mech. polishing for copper plated wafers)
IT Recycling
(of electrolyte for electrolytic chemical mech. polishing for copper plated wafers using ion exchange membrane)
IT Ion exchange membranes
(recycling of electrolyte for electrolytic chemical mech. polishing for copper plated wafers using)
IT 77-92-9, Citric acid, uses 95-14-7, 1H-Benzotriazole 107-15-3, Ethylene diamine, uses 111-40-0, Diethylenetriamine **112-24-3**, Triethylenetetramine **112-57-2**, Tetraethylenepentamine 1113-38-8, Ammonium oxalate 1310-58-3, Potassium hydroxide, uses 7632-50-0, Ammonium citrate 7664-41-7, Ammonia, uses 7722-76-1, Ammonium dihydrogen phosphate 7783-28-0, Diammonium hydrogen phosphate 15574-09-1, Ammonium succinate
RL: NUU (Other use, unclassified); USES (Uses)
(electrolyte for electrolytic chemical mech. polishing containing)
IT 7440-50-8, Copper, reactions
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(electrolyte for electrolytic chemical mech. polishing for copper plated wafers)
IT **112-24-3**, Triethylenetetramine **112-57-2**, Tetraethylenepentamine
RL: NUU (Other use, unclassified); USES (Uses)
(electrolyte for electrolytic chemical mech. polishing containing)
RN 112-24-3 HCAPLUS
CN 1,2-Ethanediamine, N,N'-bis(2-aminoethyl)- (9CI) (CA INDEX NAME)



RN 112-57-2 HCAPLUS
CN 1,2-Ethanediamine, N-(2-aminoethyl)-N'-[2-[(2-aminoethyl)amino]ethyl]-

(9CI) (CA INDEX NAME)



L114 ANSWER 24 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:470689 HCAPLUS

DN 139:53952

TI Radiation-curable peelable adhesives for **semiconductor** wafer dicing tapes

IN Muraguchi, Katsuhiko; Yoshida, Haruo

PA Showa Highpolymer Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003171622	A2	20030620	JP 2001-372399	20011206
PRAI	JP 2001-372399		20011206		

AB The adhesives, remaining no residues on Si wafers on peeling, comprise acrylic resin emulsions, multifunctional (meth)acrylates, and radiation-curable **surfactants**, e.g., 1:(0.5-1.5) (mol) reaction products of (ethoxylated) acetylene diols and α,β -unsatd. polymerizable monoisocyanates. Thus, Bu acrylate, Me methacrylate, methacrylic acid, and 2-hydroxyethyl acrylate were polymerized in the presence of Adeka Reasoap SE 11 (polyoxyethylene allyl glycidyl nonyl Ph ether) to give an emulsion, which was blended with Denacol DM 832 (polyethylene glycol epoxy methacrylate), pentaerythritol triacrylate, Irgacure 500 (photopolymer. initiator), and an ester of Karenz MOI (isocyanatoethyl methacrylate) and Olfine E 1010 and pasted on a PET film to give an adhesive sheet showing peeling strength to Si wafer 800 g/25 mm initially and 60 g/25 mm after UV exposure and no residue on the wafer on peeling.

IC ICM C09J004-06

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST **semiconductor** wafer dicing tape radiation curable; acetylene diol methacrylate **surfactant** acrylic peelable adhesive; peeling strength changeable peelable acrylic adhesive

IT **Semiconductor** materials

(peelable adhesives containing radiation-curable **surfactants** for **semiconductor** wafer dicing tapes)

IT Adhesives

(peelable, radiation-curable; peelable adhesives containing radiation-curable **surfactants** for **semiconductor** wafer dicing tapes)

IT Adhesives

(photocurable; peelable adhesives containing radiation-curable **surfactants** for **semiconductor** wafer dicing tapes)

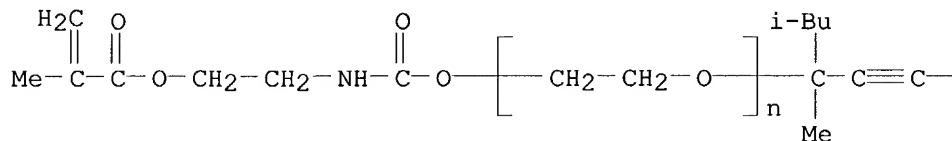
IT Polyacetylenes, uses

RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

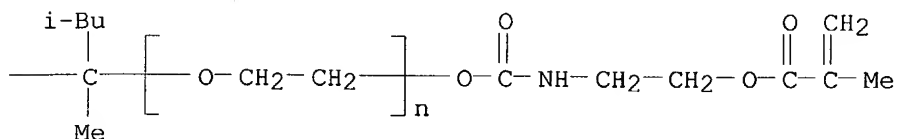
(polyoxyalkylene-, reactive **surfactants**; peelable adhesives containing radiation-curable **surfactants** for **semiconductor** wafer dicing tapes)

- IT Adhesives
(radiation-curable, peelable; peelable adhesives containing radiation-curable **surfactants** for **semiconductor** wafer dicing tapes)
- IT Adhesive tapes
Surfactants
(radiation-curable; peelable adhesives containing radiation-curable **surfactants** for **semiconductor** wafer dicing tapes)
- IT 25212-88-8P, Ethyl acrylate-methacrylic acid copolymer 25230-94-8P, Butyl acrylate-2-hydroxyethyl acrylate-methacrylic acid-methyl methacrylate copolymer 29014-81-1P, 2-Ethylhexyl methacrylate-methacrylic acid copolymer 544685-19-0P, Adeka Reasoap SE 11-butyl acrylate-2-hydroxyethyl acrylate-methacrylic acid-methyl methacrylate copolymer 544685-20-3P, Butyl acrylate-2-ethylhexyl acrylate-2-hydroxyethyl acrylate-2-hydroxyethyl methacrylate copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(peelable adhesives containing radiation-curable **surfactants** for **semiconductor** wafer dicing tapes)
- IT 3524-68-3, Pentaerythritol triacrylate 13048-33-4 79134-44-4, Denacol DM 832
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(peelable adhesives containing radiation-curable **surfactants** for **semiconductor** wafer dicing tapes)
- IT 544685-17-8 544685-18-9 544692-84-4, Olfine E 1004 ester with Karenz MOI (1:2)
RL: MOA (Modifier or additive use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(reactive **surfactants**; peelable adhesives containing radiation-curable **surfactants** for **semiconductor** wafer dicing tapes)
- IT 544685-17-8
RL: MOA (Modifier or additive use); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(reactive **surfactants**; peelable adhesives containing radiation-curable **surfactants** for **semiconductor** wafer dicing tapes)
- RN 544685-17-8 HCAPLUS
- CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -[[[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]amino]carbonyl]oxy]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



L114 ANSWER 25 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:150418 HCAPLUS

DN 138:179126

TI Method and composition for the selective removal of residual materials and barrier materials during substrate **planarization**

IN Tsai, Stan; Sun, Lizhong; Li, Shijian

PA Applied Materials, Inc., USA

SO U.S., 10 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6524167	B1	20030225	US 2000-698863	20001027
PRAI	US 2000-698863		20001027		

AB The present invention relates generally to the fabrication of **semiconductor** devices and to chemical mech. polishing and **planarization** of **semiconductor** devices. A method and composition are presented for selective removal of a conductive material residue and a portion of the barrier layer from a substrate surface. The composition includes a chelating agent, an oxidizer, a corrosion inhibitor, abrasive particles, and H₂O. The composition may further include ≥ 1 pH adjusting agents and/or ≥ 1 pH buffering agents. The method comprises selective removal of conductive material residue and a portion of the barrier layer from a substrate surface by applying a composition to a polishing pad, the composition including a chelating agent, an oxidizer, a corrosion inhibitor, abrasive particles, and H₂O. The composition may further include ≥ 1 pH adjusting agents and/or ≥ 1 pH buffering agents. In 1 aspect, the method comprises providing a substrate comprising a dielec. layer with feature definitions formed therein, a barrier layer conformally deposited on the dielec. layer and in the feature definitions formed therein, and a Cu containing material deposited on the barrier layer and filling the feature definitions formed therein, polishing the substrate to substantially remove the conductive material, and polishing the substrate with a composition comprising a chelating agent, an oxidizer, a corrosion inhibitor, abrasive particles, and H₂O to remove conductive material residue and a portion of the barrier layer.

IC ICM B24B001-00

NCL 451041000; 451036000; 438692000

CC 76-3 (Electric Phenomena)

ST chem mech polishing barrier residual material removal

IT Bicarbonates

Borates

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(alkali metal, buffering agent; method and composition for selective removal of residual materials and barrier materials during substrate

- planarization)**
- IT Slurries
(chemical-mech. polishing; method and composition for selective removal of residual materials and barrier materials during substrate **planarization)**
- IT Polishing
(chemical-mech.; method and composition for selective removal of residual materials and barrier materials during substrate **planarization)**
- IT Abrasives
Chelating agents
Cleaning
Corrosion inhibitors
Oxidizing agents
Semiconductor materials
(method and composition for selective removal of residual materials and barrier materials during substrate **planarization)**
- IT Copper alloy, base
RL: REM (Removal or disposal); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(residue; method and composition for selective removal of residual materials and barrier materials during substrate **planarization)**
- IT 1306-38-3, Cerium oxide, processes 1314-23-4, Zirconium oxide, processes 1344-28-1, Alumina, processes 7631-86-9, Silica, processes 13463-67-7, Titanium oxide, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(abrasive; method and composition for selective removal of residual materials and barrier materials during substrate **planarization)**
- IT 298-14-6, Potassium bicarbonate 1332-77-0, Potassium tetraborate
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(buffering agent; method and composition for selective removal of residual materials and barrier materials during substrate **planarization)**
- IT 56-40-6, Glycine, processes 60-00-4, Ethylenediaminetetraacetic acid, processes 107-15-3, Ethylenediamine, processes 123-39-7, Methylformamide
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(chelating agent; method and composition for selective removal of residual materials and barrier materials during substrate **planarization)**
- IT 95-14-7, 1H-Benzotriazole 7722-84-1, Hydrogen peroxide, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(method and composition for selective removal of residual materials and barrier materials during substrate **planarization)**
- IT 64-19-7, Acetic acid, processes 144-62-7, Oxalic acid, processes 1310-58-3, Potassium hydroxide, processes 7664-38-2, Phosphoric acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(pH adjusting agent; method and composition for selective removal of residual materials and barrier materials during substrate **planarization)**
- IT 7440-25-7, Tantalum, processes 7440-50-8, Copper, processes 12033-62-4, Tantalum nitride

RL: REM (Removal or disposal); TEM (Technical or engineered material use);
PROC (Process); USES (Uses)

(residue; method and composition for selective removal of residual materials
and barrier materials during substrate **planarization**)

IT 60-00-4, Ethylenediaminetetraacetic acid, processes

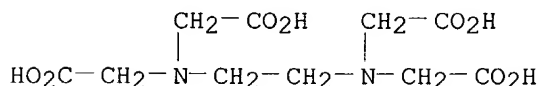
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)

(chelating agent; method and composition for selective removal of residual
materials and barrier materials during substrate **planarization**

)

RN 60-00-4 HCAPLUS

CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



RE.CNT 100 THERE ARE 100 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 26 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:679814 HCAPLUS

DN 137:178078

TI Solutions for cleaning residual contamination on wafer after
chemical mechanical polishing and the use thereof

IN Liao, Ming-ji; Jau, Tian-sheng; Lei, Tian-fu

PA Merck-Kanto Advanced Chemicals Ltd., Taiwan

SO Taiwan, 19 pp.

CODEN: TWXXA5

DT Patent

LA Chinese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	TW 402635	B	20000821	TW 1998-87116142	19980929
PRAI	TW 1998-87116142		19980929		

AB A novel cleaning soln. capable of effectively removing the residual
contamination from the surface of a wafer after **chemical**
mech. polishing, comprises an ammonium solution, a **surfactant**
which is a tetraalkyl ammonium wherein the alkyl group has 1-20 carbon
atoms, and a chelating agent preferably to be EDTA. Moreover, the subject
invention provides a process for effectively removing residual
contamination on a wafer surface prior to the growing of a gate oxidizing
layer during the manufacture of a **semiconductor**, which comprises the
use of the novel cleaning solution as recited above to clean the surface of
said wafer after **chemical mech.** polishing.

IC ICM C11D003-30

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 46

ST cleaning soln polished **semiconductor** wafer; ammoniumhydroxide
tetraalkylammonium EDTA cleaning compn

IT **Semiconductor** devices

(solns. for cleaning residual contamination from wafer after
chemical mech. polishing)

IT 60-00-4, EDTA, uses 67-42-5 75-59-2, Tetramethylammonium
hydroxide 77-98-5, Tetraethylammonium hydroxide 1336-21-6, Ammonia
water 2052-49-5, Tetrabutylammonium hydroxide 4499-86-9,

Tetrapropylammonium hydroxide 4598-61-2, Tetrapentylammonium hydroxide 17756-56-8, Tetrahexylammonium hydroxide 17756-58-0, Tetraoctylammonium hydroxide 65223-85-0, Tetraheptylammonium hydroxide

RL: TEM (Technical or engineered material use); USES (Uses)

(solns. for cleaning residual contamination from wafer after
chemical mech. polishing)

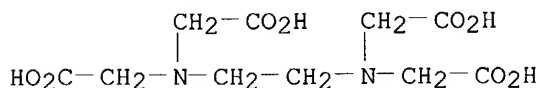
IT 60-00-4, EDTA, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(solns. for cleaning residual contamination from wafer after
chemical mech. polishing)

RN 60-00-4 HCAPLUS

CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



L114 ANSWER 27 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:674403 HCAPLUS

DN 137:185219

TI Method for removing organic material from a substrate and for oxidizing oxidizable material thereon

IN Gilton, Terry L.

PA USA

SO U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002121287	A1	20020905	US 2001-798806	20010302
PRAI	US 2001-798806		20010302		

AB Embodiments in accordance with the present invention provide for removing organic materials from substrates, for example substrates employed in the fabrication of integrated circuits, liquid crystal displays and the like. Such embodiments also provide for forming self-limiting oxide layers on oxidizable materials disposed on such substrates where such materials are exposed to the methods of the present invention. The methods of the present invention provide for contacting substrates with a solution of ozone, water and a **surfactant**, the solution being effective for removing organic materials and forming self-limiting oxide layers on oxidizable materials.

IC ICM C25F001-00

ICS C25F005-00; B08B006-00

NCL 134001300

CC 22-7 (Physical Organic Chemistry)

Section cross-reference(s): 48

ST removing org material substrate **semiconductor** devices oxidn
ozone **surfactant**

IT **Surfactants**

(nonionic; removing organic material from substrate by oxidation with ozone and water solution containing)

IT Materials

(organic; removing organic material from substrate)

IT Oxidation

(removing organic material from substrate by)

IT Photoresists
(removing organic material from substrate by oxidation with water solution of ozone containing **surfactant**)

IT Integrated circuits
Liquid crystal displays
(removing organic material from substrate in process of producing of)

IT 10028-15-6, Ozone, reactions
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(removing organic material from substrate by oxidation with)

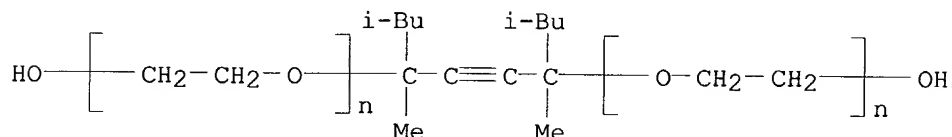
IT 9005-65-6 **9014-85-1, Surfynol 440** 12125-02-9D,
Ammonium chloride, Quaternary compds. **414869-50-4, Surfynol** CT-141
RL: NUU (Other use, unclassified); USES (Uses)
(removing organic material from substrate by oxidation with ozone and water solution containing)

IT 16833-27-5, Oxide
RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(removing organic material from substrate by oxidation with water solution of ozone containing **surfactant** and formation of self-limiting oxide layers on oxidizable materials)

IT **9014-85-1, Surfynol 440 414869-50-4, Surfynol** CT-141
RL: NUU (Other use, unclassified); USES (Uses)
(removing organic material from substrate by oxidation with ozone and water solution containing)

RN 9014-85-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)]



RN 414869-50-4 HCAPLUS
CN Surfynol CT 141 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

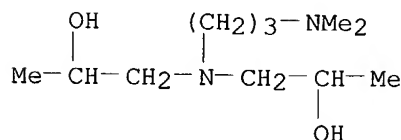
L114 ANSWER 28 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:594945 HCAPLUS
DN 137:142002
TI Alkali metal-containing polishing system and method
IN Carter, Phillip; Bogush, Gregory H.; De Rege Thesauro, Francesco; Schroeder, David J.; Chamberlain, Jeffrey P.; Mueller, Brian L.
PA Cabot Microelectronics Corporation, USA
SO PCT Int. Appl., 24 pp.
CODEN: PIXXD2
DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002061008	A2	20020808	WO 2002-US5005	20020114
	WO 2002061008	A3	20020919		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	US 2003082998	A1	20030501	US 2002-44174	20020111
	US 6612911	B2	20030902		
	EP 1358289	A2	20031105	EP 2002-717465	20020114
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			
PRAI	US 2001-261926P	P	20010116		
	WO 2002-US5005	W	20020114		
AB	The invention provides a polishing system comprising (a) a liquid carrier, (b) an alkali metal ion, (c) a compound comprising an amine group and at least one polar moiety, wherein the polar moiety contains at least one oxygen atom, and (d) a polishing pad and/or an abrasive, wherein the total ion concentration of the system is above the critical coagulation concentration. The invention also provides a method of planarizing or polishing a composite substrate comprising contacting the substrate with a the aforementioned polishing system or a polishing system comprising (a) a liquid carrier, (b) an alkali metal ion, (c) a compound comprising an amine group and at least one polar moiety, wherein the polar moiety contains at least one oxygen atom, and (d) a polishing pad and/or an abrasive, and polishing at least a portion of the substrate therewith in about 6 h or less after the polishing system is prepared.				
IC	ICM C09G001-02				
	ICS H01L021-00				
CC	42-13 (Coatings, Inks, and Related Products)				
ST	polish alkali metal ion				
IT	Abrasives				
	Polishing materials				
	(alkali metal-containing polishing system and method)				
IT	Oxides (inorganic), uses				
	RL: TEM (Technical or engineered material use); USES (Uses)				
	(alkali metal-containing polishing system and method)				
IT	Alkali metals, uses				
	RL: TEM (Technical or engineered material use); USES (Uses)				
	(ions; alkali metal-containing polishing system and method)				
IT	Semiconductor materials				
	(substrate; alkali metal-containing polishing system and method)				
IT	75-59-2, Tetramethylammonium hydroxide 96-80-0, 2-(Diisopropylamino)ethanol 100-37-8, 2-(Diethylamino)ethanol 109-56-8, 2-(Isopropylamino)ethanol 109-83-1, 2-(Methylamino)ethanol 111-41-1, 2-(2-Aminoethylamino)ethanol 111-75-1, 2-(Butylamino)ethanol 123-00-2, N-(3-Aminopropyl)morpholine 124-68-5, 2-Amino-2-methyl-1-propanol 1704-62-7, 2-(2-(Dimethylamino)ethoxy)ethanol 4620-70-6, 2-(tert-Butylamino)ethanol 7005-47-2, 2-Dimethylamino-2-methyl-1-propanol 7447-40-7, Potassium chloride (KCl), uses 18459-37-5, Cesium				

ion, uses 24203-36-9, Potassium ion, uses **63469-23-8**,
 1,1'-[[3-(Dimethylamino)propyl]imino]-bis-2-propanol
 RL: TEM (Technical or engineered material use); USES (Uses)
 (alkali metal-containing polishing system and method)
 IT 7631-86-9, Fumed silica, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (colloidal; alkali metal-containing polishing system and method)
 IT 7440-21-3, Polysilicon, miscellaneous 11105-01-4, Silicon nitride oxide
 12033-89-5, Silicon nitride Si₃N₄, miscellaneous
 RL: MSC (Miscellaneous)
 (substrate; alkali metal-containing polishing system and method)
 IT **63469-23-8**, 1,1'-[[3-(Dimethylamino)propyl]imino]-bis-2-propanol
 RL: TEM (Technical or engineered material use); USES (Uses)
 (alkali metal-containing polishing system and method)
 RN 63469-23-8 HCAPLUS
 CN 2-Propanol, 1,1'-[[3-(dimethylamino)propyl]imino]bis- (9CI) (CA INDEX
 NAME)



L114 ANSWER 29 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:505655 HCAPLUS

DN 137:162010

TI Performance evaluation of cleaning solutions enhanced with
 tetraalkylammonium hydroxide substituents for post-CMP cleaning
 on poly-Si film

AU Pan, Tung Ming; Lei, Tan Fu; Ko, Fu Hsiang; Chao, Tien Sheng; Liaw, Ming
 Chi; Lee, Ying Hao; Lu, Chih Peng

CS Department of Electronics Engineering and Institute of Electronics,
 National Chiao Tung University, Hsinchu, Taiwan

SO Journal of the Electrochemical Society (2002), 149(6), G336-G342
 CODEN: JESOAN; ISSN: 0013-4651

PB Electrochemical Society

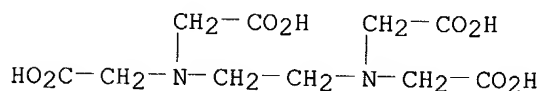
DT Journal

LA English

AB The cleaning solns. augmented with tetraalkylammonium hydroxides (TAAHs)
 with various chain-lengths of hydrocarbon substituents were developed for
 post-poly-Si **chemical mech.** polishing (CMP)
 cleaning. The cleaning performance with respect to particle, organic, and
 metal removal as well as surface roughness was evaluated for a series of
 3% NH₄OH solns. dosed with 0.26 M of a TAAH and 100 ppm of EDTA (EDTA).
 The exptl. results demonstrated that the cleaning solns. enhanced with
 these **surfactants** (TAAH) and a chelating agent (EDTA) achieved
 significantly better removal efficiencies of particle and metal impurities
 than the control solution containing 3% NH₄OH only. A conceptual model
 involving
 surface adsorption and double-layer formation was used to postulate the
 aqueous-phase surface interactions between the tetraalkylammonium cations and
 the poly-Si surface, and to explain the removal mechanisms of particle and
 metal impurities from the surface. The improved elec. properties
 (c.d.-elec. field and charge-to-breakdown characteristics) of the post-
 CMP capacitor after cleaning further demonstrated the reliability

- and feasibility of the proposed cleaning recipes.
- CC 76-3 (Electric Phenomena)
Section cross-reference(s): 66
- ST cleaning silicon **semiconductor** device fabrication
- IT Polishing
(**chemical-mech.**; performance of cleaning solns. enhanced with tetraalkylammonium hydroxide substituents for post-CMP cleaning on poly-Si film)
- IT Vapor deposition process
(chemical; performance of cleaning solns. enhanced with tetraalkylammonium hydroxide substituents for post-CMP cleaning on poly-Si film)
- IT Adsorption
Annealing
Chemical chains
Cleaning
Contact angle
Doping
Electric breakdown
Electric double layer
Etching kinetics
MOS capacitors
Semiconductor device fabrication
Simulation and Modeling, physicochemical
Sintering
Surface roughness
Trapping
(performance of cleaning solns. enhanced with tetraalkylammonium hydroxide substituents for post-CMP cleaning on poly-Si film)
- IT Metals, processes
RL: REM (Removal or disposal); PROC (Process)
(performance of cleaning solns. enhanced with tetraalkylammonium hydroxide substituents for post-CMP cleaning on poly-Si film)
- IT Particles
(removal; performance of cleaning solns. enhanced with tetraalkylammonium hydroxide substituents for post-CMP cleaning on poly-Si film)
- IT 10025-87-3, Phosphorus chloride oxide POC13
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(dopant precursor; performance of cleaning solns. enhanced with tetraalkylammonium hydroxide substituents for post-CMP cleaning on poly-Si film)
- IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(electrodes; performance of cleaning solns. enhanced with tetraalkylammonium hydroxide substituents for post-CMP cleaning on poly-Si film)
- IT 7440-21-3, Silicon, processes
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(performance of cleaning solns. enhanced with tetraalkylammonium hydroxide substituents for post-CMP cleaning on poly-Si film)
- IT 60-00-4, EDTA, processes 75-59-2, Tetramethylammonium hydroxide
77-98-5, Tetraethylammonium hydroxide 2052-49-5, Tetrabutylammonium hydroxide 4499-86-9, Tetrapropylammonium hydroxide 7664-41-7, Ammonia, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES

(Uses)
 (performance of cleaning solns. enhanced with tetraalkylammonium hydroxide substituents for post-CMP cleaning on poly-Si film)
 IT 7631-86-9P, Silica, uses
 RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
 (performance of cleaning solns. enhanced with tetraalkylammonium hydroxide substituents for post-CMP cleaning on poly-Si film)
 IT 60-00-4, EDTA, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (performance of cleaning solns. enhanced with tetraalkylammonium hydroxide substituents for post-CMP cleaning on poly-Si film)
 RN 60-00-4 HCAPLUS
 CN Glycine, N,N'-1,2-ethanediyldis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 30 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2002:466693 HCAPLUS
 DN 137:40135
 TI Stabilized alkaline solutions for **cleaning** of
semiconductor substrates for microelectronic applications
 IN Skee, David C.
 PA USA
 SO U.S. Pat. Appl. Publ., 27 pp., Cont.-in-part of U.S. Ser. No. 688,559.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002077259	A1	20020620	US 2001-859142	20010516
	US 6599370	B2	20030729		
	US 6585825	B1	20030701	US 2000-688559	20001016
	WO 2002033033	A1	20020425	WO 2001-US42406	20010928
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2001096947	A5	20020429	AU 2001-96947	20010928
	EP 1326951	A1	20030716	EP 2001-977863	20010928
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	JP 2004511917	T2	20040415	JP 2002-536403	20010928
PRAI	US 2000-688559	A2	20001016		

US 1998-85861P P 19980518
US 1999-115084P P 19990107
WO 1999-US10875 A2 19990517
US 2001-859142 A 20010516
WO 2001-US42406 W 20010928

- AB This invention relates to compns. useful in the microelectronics industry for **cleaning semiconductor** wafer substrates. Particularly, this invention relates to alkaline stripping or **cleaning** compns. containing bath stabilizing agents that are used for **cleaning** wafers having metal lines and vias by removing metallic and organic contamination without damaging the integrated circuits. The invention provides aqueous alkaline compns. useful in the microelectronics industry for stripping or **cleaning semiconductor** wafer substrates by removing photoresist residues and other unwanted contaminants. The compns. typically contain (a) one or more metal ion-free bases at sufficient amts. to produce a pH of .apprx.10-13 and ≥ 1 bath stabilizing agents having at least one pKa at 10-13 to maintain this pH during use; (b) optionally, .apprx.0.01% to .apprx.5% by weight (expressed as % SiO₂) of a H₂O-soluble metal ion-free silicate; (c) optionally, .apprx.0.01% to .apprx.10% by weight of ≥ 1 chelating agents; (d) optionally, .apprx.0.01% to .apprx.80% by weight of ≥ 1 H₂O-soluble organic cosolvents; and (e) optionally, .apprx.0.01% to .apprx.1% by weight of a H₂O-soluble **surfactant**.
- IC ICM B08B007-00
ICS B08B003-00; C23G001-00; C23G001-02; C03C023-00; F23J001-00;
B08B003-10; B08B003-14
- NCL 510175000
- CC 76-2 (Electric Phenomena)
Section cross-reference(s): 48
- ST **semiconductor** material alk **cleaning** soln
- IT Silicates, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(bath stabilizing agent; stabilized alkaline solns. for **cleaning** of **semiconductor** substrates for microelectronic applications)
- IT Amino acids, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(chelating agent; stabilized alkaline solns. for **cleaning** of **semiconductor** substrates for microelectronic applications)
- IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(cosolvent; stabilized alkaline solns. for **cleaning** of **semiconductor** substrates for microelectronic applications)
- IT Photoresists
(residue removal; stabilized alkaline solns. for **cleaning** of **semiconductor** substrates for microelectronic applications)
- IT Amines, processes
Quaternary ammonium compounds, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**semiconductor cleaning** solution alkaline component; stabilized alkaline solns. for **cleaning** of **semiconductor** substrates for microelectronic applications)
- IT Chelating agents
Cleaning
Interconnections, electric
Semiconductor materials

Stabilizing agents

Surfactants

(stabilized alkaline solns. for **cleaning** of **semiconductor** substrates for microelectronic applications)

- IT Bases, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (stabilized alkaline solns. for **cleaning** of **semiconductor** substrates for microelectronic applications)
- IT 107-15-3, 1,2-Ethanediamine, processes 109-76-2, 1,3-Propanediamine
 110-60-1, 1,4-Butanediamine 124-09-4, 1,6-Hexanediamine, processes
 373-44-4, 1,8-Octanediamine 589-37-7, 1,3-Diaminopentane 2783-17-7,
 1,12-Dodecanediamine 15520-10-2, 2-Methyl-1,5-pentanediamine
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (bath stabilizing agent, **semiconductor cleaning** solution alkaline component; stabilized alkaline solns. for **cleaning** of **semiconductor** substrates for microelectronic applications)
- IT 69-72-7, Salicylic acid, processes 94-67-7, Salicylaldehyde 97-05-2,
 5-Sulfosalicylic acid 108-46-3, Resorcinol, processes 127-06-0,
 Acetone oxime 142-08-5, 2-Hydroxypyridine 504-15-4, Orcinol
 608-25-3, 2-Methylresorcinol 626-64-2, 4-Hydroxypyridine 7664-38-2,
 Phosphoric acid, processes 7722-84-1, Hydrogen peroxide, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (bath stabilizing agent; stabilized alkaline solns. for **cleaning** of **semiconductor** substrates for microelectronic applications)
- IT 60-00-4, (Ethylendinitrilo)tetraacetic acid, processes 67-43-6,
 Diethylenetriaminepentaacetic acid 482-54-2, (1,2-Cyclohexylenedinitrilo)tetraacetic acid 869-52-3,
 Triethylenetetraminehexaacetic acid 1429-50-1 2809-21-4 3148-72-9,
 1,3-Diamino-2-hydroxypropane-N,N,N',N'-tetraacetic acid 6419-19-8,
 Nitrilotris(methylene)triphosphonic acid 13291-61-7,
 trans-(1,2-Cyclohexylenedinitrilo)tetraacetic acid 13598-36-2D,
 Phosphonic acid, derivs. 15827-60-8, Diethylenetriaminepenta(methylenephosphonic acid) 34690-00-1 37971-36-1, 2-Phosphonobutane-1,2,4-tricarboxylic acid 83834-39-3 91987-74-5 92761-25-6 122114-60-7
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (chelating agent; stabilized alkaline solns. for **cleaning** of **semiconductor** substrates for microelectronic applications)
- IT 7429-90-5, Aluminum, processes 11099-19-7
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (**cleaning** of; stabilized alkaline solns. for **cleaning** of **semiconductor** substrates for microelectronic applications)
- IT 56-81-5, Glycerol, processes 52928-63-9D, 1-Hydroxy-2-pyrrolidinone, alkyl derivs.
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (cosolvent; stabilized alkaline solns. for **cleaning** of **semiconductor** substrates for microelectronic applications)
- IT 62-49-7, Choline 75-59-2, Tetramethylammonium hydroxide 77-98-5,
 Tetraethylammonium hydroxide 462-94-2, 1,5-Pentanediamine 631-41-4,
 Tetraethanolammonium hydroxide 646-19-5, 1,7-Heptanediamine 646-24-2,
 1,9-Nonanediamine 646-25-3, 1,10-Decanediamine 822-08-2,
 1,11-Undecanediamine 1336-21-6D, Ammonium hydroxide, derivs.
 2052-49-5, Tetrabutylammonium hydroxide 4499-86-9, Tetrapropylammonium

hydroxide 12794-95-5D, Ammonium silicate, derivs. 33667-48-0,
Monomethyltriethanolammonium hydroxide 53116-81-7, Tetramethyl ammonium
silicate 109334-81-8, Methyltriethylammonium hydroxide

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)

(**semiconductor cleaning** solution alkaline component;
stabilized alkaline solns. for **cleaning** of **semiconductor**
substrates for microelectronic applications)

IT 9014-85-1, Surfynol 465

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)

(**surfactant**; stabilized alkaline solns. for **cleaning** of
semiconductor substrates for microelectronic applications)

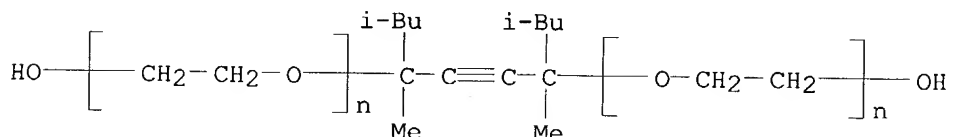
IT 9014-85-1, Surfynol 465

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)

(**surfactant**; stabilized alkaline solns. for **cleaning** of
semiconductor substrates for microelectronic applications)

RN 9014-85-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(2-
methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX
NAME)



L114 ANSWER 31 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:465610 HCAPLUS

DN 137:55871

TI Electrically insulating porous silica thin films, multilayer wiring
structures, **semiconductor** devices, coating compositions, and
manufacture of porous silica thin films with the compositions

IN Hanahata, Hiroyuki; Ioka, Takaaki

PA Asahi Kasei Corporation, Japan

SO Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002173641	A2	20020621	JP 2000-374711	20001208
PRAI	JP 2000-299510	A	20000929		

AB The porous SiO₂ thin films, useful for elec. insulating layers of
multilayer wiring structures of **semiconductor** devices, have d.
0.5-1.5, specific relations between d. and hardness and/or Young's
modulus, and the ratios of alkyl groups and/or Ph groups to total Si atoms
of 5-100 mol%. The thin films are formed by applying coating compns. (pH
5.0-7.5) containing SiO₂ precursors mainly comprising alkoxysilanes
R₁nSi(OR₂)_{4-n} (R₁ = H, C1-8 linear, branched, or cyclic alkyl, aryl; R₂ =
C1-6 linear or branched alkyl; n = 0-3) and/or their hydrolyzates, organic
polymers, and H₂O on substrates, gelling the SiO₂ precursors at
0-300°, and removing organic polymers from the resulting SiO₂-organic

polymer composites. The porous SiO₂ thin films have good mech. strength and are resistant to **chemical-mech.** polishing (**CMP**) in manufacture of wiring structures.

IC ICM C09D183-02

CC ICS C01B033-12; C09D183-04; C09D201-00; H01L021-312; H01L021-316
76-3 (Electric Phenomena)
Section cross-reference(s): 42

ST porous silica thin film elec insulator; **semiconductor** wiring
porous silica thin film; alkoxysilane coating org polymer silica film; sol
gel coating silica porous film; **chem mech** polishing
resistance porous silica

IT Sol-gel processing
(coating; manufacture of elec. insulating porous silica thin films with good
mech. strength for multilayer wirings and **semiconductor**
devices)

IT Dielectric films
Semiconductor devices
(manufacture of elec. insulating porous silica thin films with good mech.
strength for multilayer wirings and **semiconductor** devices)

IT Printed circuit boards
(multilayer; manufacture of elec. insulating porous silica thin films with
good mech. strength for multilayer wirings and **semiconductor**
devices)

IT Polysiloxanes, properties
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(silicate-; manufacture of elec. insulating porous silica thin films with
good mech. strength for multilayer wirings and **semiconductor**
devices)

IT Coating process
(sol-gel; manufacture of elec. insulating porous silica thin films with good
mech. strength for multilayer wirings and **semiconductor**
devices)

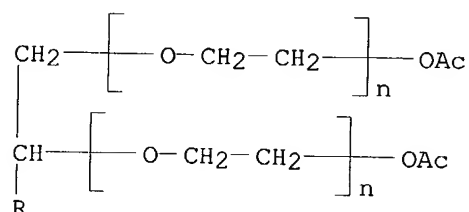
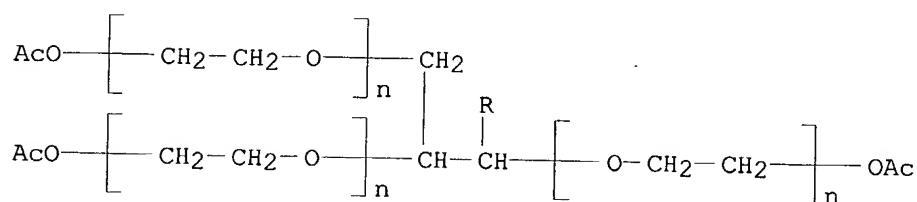
IT 24991-55-7, Polyethylene glycol dimethyl ether 51728-26-8, Ethoxylated
pentaerythritol tetraacrylate **438449-67-3**
RL: NUU (Other use, unclassified); USES (Uses)
(in manufacture of elec. insulating porous silica thin films with good mech.
strength for multilayer wirings and **semiconductor** devices)

IT 7631-86-9P, Silica, properties 88029-70-3P, Methyltriethoxysilane-
tetraethoxysilane copolymer
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(manufacture of elec. insulating porous silica thin films with good mech.
strength for multilayer wirings and **semiconductor** devices)

IT **438449-67-3**
RL: NUU (Other use, unclassified); USES (Uses)
(in manufacture of elec. insulating porous silica thin films with good mech.
strength for multilayer wirings and **semiconductor** devices)

RN 438449-67-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -(acetyloxy)-, ether with
pentitol (5:1) (9CI) (CA INDEX NAME)



L114 ANSWER 32 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:428013 HCAPLUS

DN 137:26797

TI **Semiconductor** device fabrication in prevention of oxidation in copper circuits

IN Oe, Shigeru; Tanaka, Kazunari; Nito, Shoichi; Takahashi, Kenichi

PA Mitsubishi Gas Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002164315	A2	20020607	JP 2000-362346	20001129
PRAI	JP 2000-362346		20001129		
AB	The title fabrication involves patterning a Cu circuit layer on a semiconductor substrate, treating the Cu surface with an aqueous C3-10 acetylenic alcs., and drying. The use of the acetylenic alcs. gives the Cu circuit surface antioxidn. and anticorrosion protection.				
IC	ICM H01L021-304 ICS H01L021-3205				
CC	76-3 (Electric Phenomena)				
ST	Section cross-reference(s): 56 acetylenic alc antioxidn anticorrosion copper circuit				
IT	semiconductor device fabrication				
IT	Alcohols, properties				
IT	RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses) (acetylenic; semiconductor device fabrication in prevention of oxidation in copper circuits)				
IT	Oxidation (of copper surface, prevention of; semiconductor device fabrication in prevention of oxidation in copper circuits)				
IT	Antioxidants Corrosion-resistant materials Drying Semiconductor device fabrication (semiconductor device fabrication in prevention of oxidation in copper circuits)				

IT 74-86-2D, Ethyne, alcs.
 RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
 (acetylenic alc.; **semiconductor** device fabrication in
 prevention of oxidation in copper circuits)

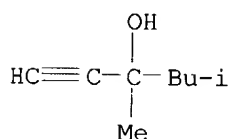
IT 78-27-3, 1-Ethynyl-1-cyclohexanol **107-54-0**, 3,5-Dimethyl-1-hexyn-
 3-ol 61996-79-0, 5-Methyl-1-hexyn-3-ol
 RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
 (antioxidant; **semiconductor** device fabrication in prevention
 of oxidation in copper circuits)

IT 7440-50-8, Copper, properties
 RL: PEP (Physical, engineering or chemical process); PRP (Properties);
 PROC (Process)
 (protection of, for antioxidn. anticorrosion; **semiconductor**
 device fabrication in prevention of oxidation in copper circuits)

IT **107-54-0**, 3,5-Dimethyl-1-hexyn-3-ol
 RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
 (antioxidant; **semiconductor** device fabrication in prevention
 of oxidation in copper circuits)

RN 107-54-0 HCAPLUS

CN 1-Hexyn-3-ol, 3,5-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L114 ANSWER 33 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:315055 HCAPLUS

DN 136:327438

TI Stabilized alkaline compositions for **cleaning** microelectronic
 substrates

IN Skee, David C.

PA Mallinckrodt Baker, Inc., USA

SO PCT Int. Appl., 68 pp.
 CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 4

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2002033033	A1	20020425	WO 2001-US42406	20010928
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 6585825	B1	20030701	US 2000-688559	20001016
US 2002077259	A1	20020620	US 2001-859142	20010516
US 6599370	B2	20030729		
AU 2001096947	A5	20020429	AU 2001-96947	20010928
EP 1326951	A1	20030716	EP 2001-977863	20010928

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

JP 2004511917 T2 20040415 JP 2002-536403 20010928
PRAI US 2000-688559 A 20001016
US 2001-859142 A 20010516
US 1998-85861P P 19980518
US 1999-115084P P 19990107
WO 1999-US10875 A2 19990517
WO 2001-US42406 W 20010928

AB Aqueous alkaline compns. are used for stripping or **cleaning semiconductor** wafer substrates of photoresist residues and other unwanted contaminants. The compns. typically contain (a) ≥ 1 metal ion-free bases to produce a pH .apprx.10-13 and ≥ 1 bath stabilizing agents having ≥ 1 pKa 10-13 to maintain this pH during use, (b) optionally, .apprx.0.01-5% (expressed as SiO₂) of a water-soluble metal ion-free silicate, (c) optionally, .apprx.0.01-10% ≥ 1 chelating agents, (d) optionally, .apprx.0.01-80% ≥ 1 water-soluble organic co-solvents, and (e) optionally, .apprx.0.01-1% water-soluble **surfactant**. An example bath contained tetramethylammonium hydroxide 1.0, trans-(1,2-cyclohexylenedinitrilo)tetraacetic acid 1.0, **Surfynol** 465 0.06, glycerol 3.0, and salicylic acid 0.9%.

IC ICM C11D003-00

ICS C11D007-32; C11D007-26; G03F007-42

CC 46-6 (Surface Active Agents and Detergents)

Section cross-reference(s): 42, 76

ST alk base **cleaning** solvent microelectronic device

IT **Cleaning** solvents

Coating removers

Semiconductor materials

Stabilizing agents

(stabilized long-life alkaline compns. for **cleaning**

microelectronic substrates of metal and photoresist residues)

IT 7429-90-5, Aluminum, processes 7440-50-8, Copper, processes

RL: REM (Removal or disposal); PROC (Process)

(stabilized long-life alkaline compns. for **cleaning**

microelectronic substrates of metal and photoresist residues)

IT 62-49-7, Choline 69-72-7, Salicylic acid, uses 75-59-2,
Tetramethylammonium hydroxide 77-98-5, Tetraethylammonium hydroxide
94-67-7, Salicylaldehyde 97-05-2, 5-Sulfosalicylic acid 107-15-3,
1,2-Ethanediamine, uses 108-46-3, Resorcinol, uses 109-76-2,
1,3-Propanediamine 110-60-1, 1,4-Butanediamine 124-09-4,
1,6-Hexanediamine, uses 127-06-0, Acetone oxime 142-08-5,
2-Hydroxypyridine 373-44-4, 1,8-Octanediamine 462-94-2,
1,5-Pentanediamine 504-15-4, Orcinol 589-37-7, 1,3-Diaminopentane
608-25-3, 2-Methylresorcinol 626-64-2, 4-Hydroxypyridine 631-41-4,
Tetraethanolammonium hydroxide 646-19-5, 1,7-Heptanediamine 646-24-2,
1,9-Nonanediamine 646-25-3, 1,10-Decanediamine 822-08-2,
1,11-Undecanediamine 2052-49-5, Tetrabutylammonium hydroxide
2783-17-7, 1,12-Dodecanediamine 4499-86-9, Tetrapropylammonium hydroxide
7664-38-2, Phosphoric acid, uses 7722-84-1, Hydrogen peroxide, uses
15520-10-2, 2-Methyl-1,5-pentanediamine 33667-48-0,
Monomethyltriethanolammonium hydroxide 109334-81-8,
Methyltriethylammonium hydroxide

RL: TEM (Technical or engineered material use); USES (Uses)

(stabilized long-life alkaline compns. for **cleaning**

microelectronic substrates of metal and photoresist residues)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 34 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:107701 HCAPLUS

DN 136:159895

TI Photolithographic process for manufacturing a microelectronic device using shrinkage materials

IN Dammel, Ralph R.; Eakin, Ronald J.; Spak, Mark A.

PA Clariant International Ltd., Switz.; Clariant Finance (BVI) Limited

SO PCT Int. Appl., 16 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002010858	A2	20020207	WO 2001-EP8391	20010720
	WO 2002010858	A3	20020808		
	W: CN, JP, KR, SG				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	TW 536734	B	20030611	TW 2001-90114153	20010612
	EP 1307785	A2	20030507	EP 2001-949500	20010720
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	JP 2004505319	T2	20040219	JP 2002-515525	20010720
PRAI	US 2000-629279	A	20000731		
	WO 2001-EP8391	W	20010720		

AB The present invention relates to a process for manufacturing a microelectronic device, comprising providing a substrate with a photoresist image, coating the photoresist image with a shrinkage material, insolubilizing a portion of the shrinkage material in contact with the photoresist image, removing a portion of the shrinkage material which is not insolubilized with a removal solution, further where the removal solution comprises an aqueous solution of a

surfactant.

IC ICM G03F007-00

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 74

ST photolithog **semiconductor** device shrinkage material**surfactant** photoresistIT **Surfactants**

(anionic; photolithog. process for manufacturing microelectronic device using shrinkage materials)

IT **Surfactants**

(nonionic; photolithog. process for manufacturing microelectronic device using shrinkage materials)

IT Microelectronic devices

Photolithography

Photoresists

Solvents

Surfactants

(photolithog. process for manufacturing microelectronic device using shrinkage materials)

IT Acids, processes

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(photolithog. process for manufacturing microelectronic device using shrinkage materials)

IT Hydroxides (inorganic)

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(photoresist remover; photolithog. process for manufacturing microelectronic device using shrinkage materials)

IT Coating process
(spin, photoresist; photolithog. process for manufacturing microelectronic device using shrinkage materials)

IT 24979-70-2, Poly(4-hydroxystyrene) 159296-87-4, 4-Hydroxystyrene-tert-butyl acrylate copolymer
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(DUV photoresist; photolithog. process for manufacturing microelectronic device using shrinkage materials)

IT **9014-85-1, Surfynol 440** 106392-12-5, Macol 16
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(anionic **surfactant**; photolithog. process for manufacturing microelectronic device using shrinkage materials)

IT 75-59-2, AZ-MIF 300
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(developer; photolithog. process for manufacturing microelectronic device using shrinkage materials)

IT 394733-02-9, AZ-DX 3200
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(photolithog. process for manufacturing microelectronic device using shrinkage materials)

IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(photolithog. process for manufacturing microelectronic device using shrinkage materials)

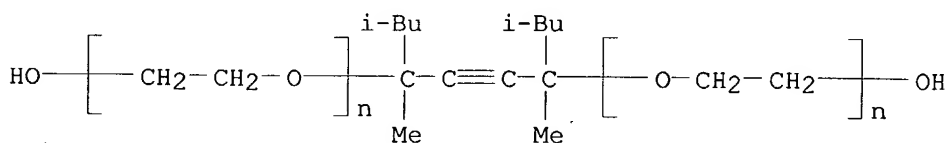
IT 328060-50-0, AZ R200
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(shrink material; photolithog. process for manufacturing microelectronic device using shrinkage materials)

IT 2235-54-3, Ammonium lauryl sulfate 55489-71-9, Tetramethylammonium stearate, processes 64000-90-4, Tetramethylammonium laurate, processes 75593-43-0, Tetramethylammonium hexanoate, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**surfactant**; photolithog. process for manufacturing microelectronic device using shrinkage materials)

IT **9014-85-1, Surfynol 440**
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(anionic **surfactant**; photolithog. process for manufacturing microelectronic device using shrinkage materials)

RN 9014-85-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



L114 ANSWER 35 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:63699 HCAPLUS

DN 136:127372

TI **Cleaning** agents of **semiconductor** substrates with Cu interconnections

IN Kakisawa, Masahiko; Umekita, Kenichi; Hayashida, Kazuyoshi

PA Wako Pure Chemical Industries, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002020787	A2	20020123	JP 2000-203437	20000705
PRAI	JP 2000-203437		20000705		

AB The agents contain nonionic **surfactants** that may contain -C=C- groups. The agents can effectively remove impurities from the surface of **semiconductor** substrates without corroding or oxidizing the Cu interconnections.

IC ICM C11D001-72

ICS C11D001-722; C11D003-26; C11D003-30; C11D017-08; H01L021-304; H01L021-306

CC 76-2 (Electric Phenomena)

ST **cleaning** agent **semiconductor** substrate copper interconnection; nonionic **surfactant cleaning** copper interconnection

IT Interconnections, electric

Semiconductor materials

(**cleaning** agents of **semiconductor** substrate with Cu interconnections)

IT **Surfactants**

(nonionic; **cleaning** agents of **semiconductor** substrate with Cu interconnections)

IT **9014-85-1**

RL: NUU (Other use, unclassified); USES (Uses)

(**cleaning** agents of **semiconductor** substrate with Cu interconnections)

IT 7440-50-8, Copper, processes

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(**cleaning** agents of **semiconductor** substrate with Cu interconnections)

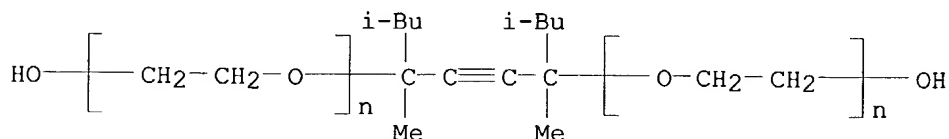
IT **9014-85-1**

RL: NUU (Other use, unclassified); USES (Uses)

(**cleaning** agents of **semiconductor** substrate with Cu interconnections)

RN 9014-85-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α,α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



L114 ANSWER 36 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:51578 HCAPLUS

DN 136:127540

TI Ready-to-use stable **chemical-mechanical** polishing slurries

IN Pasqualoni, Anthony Mark; Mahulikar, Deepak

PA Arch Specialty Chemicals, Inc., USA

SO PCT Int. Appl., 18 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002004573	A2	20020117	WO 2001-US10491	20010402
	WO 2002004573	A3	20030821		
	W: JP, KR, SG				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	US 6468913	B1	20021022	US 2000-611702	20000708
	EP 1354017	A2	20031022	EP 2001-922992	20010402
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	JP 2004502860	T2	20040129	JP 2002-509430	20010402
	TW 574347	B	20040201	TW 2001-90113232	20010531
PRAI	US 2000-611702	A	20000708		
	WO 2001-US10491	W	20010402		

AB In accordance with the invention, there is provided a **chemical-mech.** polishing slurry for polishing a substrate, e.g., metal substrates on **semiconductor** wafers. The slurry is comprised primarily of abrasive particles (e.g., silica, alumina, or ceria) and an oxidizing agent (e.g., hydrogen peroxide, potassium ferricyanide, potassium dichromate, potassium iodate, potassium bromate, vanadium trioxide, hydrochlorous acid, sodium hypochlorite, potassium hypochlorite, calcium hypochlorite, magnesium hypochlorite, ferric nitrate, ammonium persulfate, potassium permanganate), wherein the slurry exhibits a stability having a shelf life of at least 30 days.

IC ICM C09K

CC 76-3 (Electric Phenomena)

ST **semiconductor** wafer polishing slurry

IT Fluorides, uses

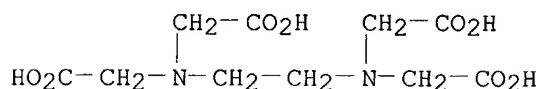
RL: MOA (Modifier or additive use); USES (Uses)

(alkali and alkaline earth; ready-to-use stable **chemical-mech.** polishing slurries for **semiconductor** wafers)IT **Semiconductor** device fabrication**Surfactants**(ready-to-use stable **chemical-mech.** polishing slurries for **semiconductor** wafers)

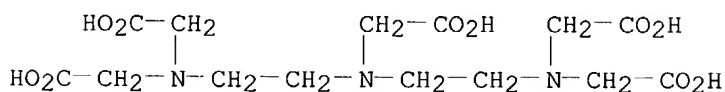
IT Tannins

- RL: NUU (Other use, unclassified); USES (Uses)
(ready-to-use stable **chemical-mech.** polishing slurries
for **semiconductor** wafers)
- IT 60-00-4, uses 67-43-6, Diethylenetriaminepentaacetic
acid 139-13-9, Nitrilotriacetic acid 150-39-0,
N-Hydroxyethylethylenediaminetriacetic acid 2068-72-6
RL: MOA (Modifier or additive use); USES (Uses)
(chelating agent; ready-to-use stable **chemical-mech.**
polishing slurries for **semiconductor** wafers)
- IT 95-14-7, 1H-Benzotriazole 136-85-6, 6-Tolyltriazole 152275-68-8,
1-(2,3-Dicarboxypropyl)benzotriazole
RL: MOA (Modifier or additive use); USES (Uses)
(corrosion inhibitor; ready-to-use stable **chemical-mech**
. polishing slurries for **semiconductor** wafers)
- IT 7727-54-0, Ammonium persulfate
RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or
reagent); USES (Uses)
(oxidant; ready-to-use stable **chemical-mech.** polishing
slurries for **semiconductor** wafers)
- IT 1314-34-7, Vanadium trioxide 7681-52-9, Sodium hypochlorite 7722-64-7,
Potassium permanganate 7722-84-1, Hydrogen peroxide, reactions
7758-01-2, Potassium bromate 7758-05-6, Potassium iodate 7778-50-9,
Potassium dichromate 7778-54-3, Calcium hypochlorite 7778-66-7,
Potassium hypochlorite 7790-92-3, Hypochlorous acid 10233-03-1,
Magnesium hypochlorite 10421-48-4, Ferric nitrate 13746-66-2,
Potassium ferricyanide
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidant; ready-to-use stable **chemical-mech.** polishing
slurries for **semiconductor** wafers)
- IT 102-71-6, Triethanolamine, uses 103-76-4, 1-Piperazineethanol
111-42-2, Diethanolamine, uses 141-43-5, Monoethanolamine, uses
373-68-2, Tetramethylammonium fluoride 584-08-7, Potassium carbonate
877-24-7, Potassium hydrogen phthalate 929-06-6, Diethyleneglycolamine
1341-49-7, Ammonium bifluoride 6484-52-2, Ammonium nitrate, uses
7727-21-1, Potassium persulfate 7803-49-8, Hydroxylamine, uses
10039-54-0, Hydroxylamine sulfate 10117-38-1, Potassium sulfite
12125-01-8, Ammonium fluoride 57178-78-6 68444-11-1 130397-22-7,
Perfluoric acid
RL: MOA (Modifier or additive use); USES (Uses)
(ready-to-use stable **chemical-mech.** polishing slurries
for **semiconductor** wafers)
- IT 50-21-5, Lactic acid, uses 64-18-6, Formic acid, uses 64-19-7, Acetic
acid, uses 77-92-9, Citric acid, uses 79-09-4, Propanoic acid, uses
87-69-4, Tartaric acid 88-99-3, Phthalic acid, uses 107-92-6, Butanoic
acid, uses 109-52-4, Pentanoic acid, uses 111-14-8, Heptanoic acid
112-05-0, Nonanoic acid 124-07-2, Octanoic acid, uses 142-62-1,
Hexanoic acid, uses 149-91-7, Gallic acid, uses 303-38-8 526-95-4,
Gluconic acid 6915-15-7, Malic acid 7647-01-0, Hydrochloric acid, uses
7664-38-2, Phosphoric acid, uses 7664-39-3, Hydrofluoric acid, uses
7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses
35914-36-4, Pyrogallol carboxylic acid
RL: NUU (Other use, unclassified); USES (Uses)
(ready-to-use stable **chemical-mech.** polishing slurries
for **semiconductor** wafers)
- IT 1306-38-3, Ceria, uses 1344-28-1, Alumina, uses 7631-86-9, Silica,
uses
RL: TEM (Technical or engineered material use); USES (Uses)
(ready-to-use stable **chemical-mech.** polishing slurries
for **semiconductor** wafers)

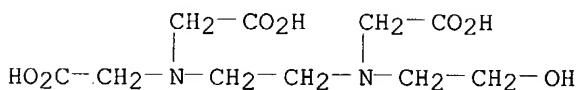
IT 1310-58-3, Potassium hydroxide, uses 1336-21-6, Ammonium hydroxide
 RL: MOA (Modifier or additive use); USES (Uses)
 (stabilizing agent; ready-to-use stable **chemical-mech.**
 polishing slurries for **semiconductor** wafers)
 IT 60-00-4, uses 67-43-6, Diethylenetriaminepentaacetic
 acid 150-39-0, N-Hydroxyethylethylenediaminetriacetic acid
 RL: MOA (Modifier or additive use); USES (Uses)
 (chelating agent; ready-to-use stable **chemical-mech.**
 polishing slurries for **semiconductor** wafers)
 RN 60-00-4 HCAPLUS
 CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)]



RN 67-43-6 HCAPLUS
 CN Glycine, N,N-bis[2-[bis(carboxymethyl)amino]ethyl]- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 150-39-0 HCAPLUS
 CN Glycine, N-[2-[bis(carboxymethyl)amino]ethyl]-N-(2-hydroxyethyl)- (9CI)
 (CA INDEX NAME)



L114 ANSWER 37 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:896490 HCAPLUS

DN 136:30426

TI Polishing fluid, polishing method, **semiconductor** device and
semiconductor device fabrication method

IN Misra, Sudhanshu; Roy, Pradip Kumar; Chetlur, Sundar Srinivasaan; Saxena,
 Vivek

PA Agere Systems Guardian Corp., USA

SO U.S., 6 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	US 6328633	B1	20011211	US 2000-483785	20000114
	US 2001036796	A1	20011101	US 2001-894117	20010628
PRAI	US 2000-483785	A3	20000114		

AB A polishing fluid comprising a distributed organic phase and a continuous aqueous

phase, each phase comprising ≥ 1 complexing agent. The aqueous phase also having abrasive particles dispersed therein. Reaction products generated during polishing interact with the aqueous phase complexing agent to form H₂O soluble metallic complexes, the H₂O soluble metallic complexes diffuse to an organic/H₂O interface where they release complexing agent mols. in the aqueous phase and generate metal ions which interact with the organic phase complexing agent to form organometallic complexes. Further disclosed is a polishing method, a **semiconductor** device and **semiconductor** device fabrication method using the polishing fluid.

IC ICM B24B001-00

NCL 451041000

CC 76-3 (Electric Phenomena)

ST polishing fluid **semiconductor** device manuf

IT Particles

(abrasive; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)

IT Polishing

(**chemical-mech.**; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)

IT Borophosphosilicate glasses

RL: PEP (Physical, engineering or chemical process); PROC (Process) (dielec. film; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)

IT Abrasives

(particles; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)

IT Complexing agents

Interconnections, electric

Oxidizing agents

Polishing

Semiconductor device fabrication

Surfactants

(polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)

IT Ion exchange

(recycling polishing fluid; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)

IT Emulsions

(stabilizer; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)

IT 1306-38-3, Ceria, processes 1309-48-4, Magnesium oxide, processes 1344-28-1, Alumina, processes

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(abrasive particles; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)

IT 60-00-4, EDTA, processes 67-43-6, DTPA

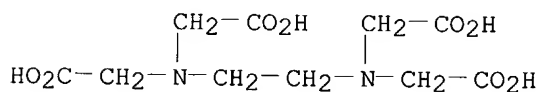
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(aqueous complexing agent; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)

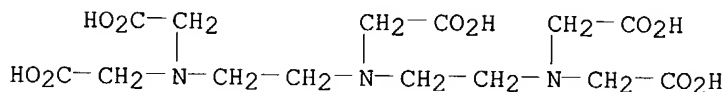
IT 78-10-4, TEOS

RL: PEP (Physical, engineering or chemical process); PROC (Process) (dielec. film; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)

- IT 59763-75-6, Tantalum oxide
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (film; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)
- IT 1314-35-8, Tungsten oxide, processes 1344-70-3, Copper oxide
 7429-90-5, Aluminum, processes 7440-21-3, Silicon, processes
 7440-32-6, Titanium, processes 7440-33-7, Tungsten, processes
 7440-50-8, Copper, processes 7631-86-9, Silicon oxide, processes
 13463-67-7, Titanium oxide, processes
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (film; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)
- IT 66-71-7, 1,10-Phenanthroline 148-24-3, 8-Hydroxyquinoline, processes
 37275-48-2, Bipyridine
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (organic phase complexing agent; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)
- IT 1336-21-6, Ammonium hydroxide 6484-52-2, Ammonium nitrate, processes
 7722-84-1, Hydrogen peroxide, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (oxidants in polishing fluid; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)
- IT 60-00-4, EDTA, processes 67-43-6, DTPA
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (aqueous complexing agent; polishing fluid, polishing method, **semiconductor** device and **semiconductor** device fabrication method)
- RN 60-00-4 HCAPLUS
- CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)]



- RN 67-43-6 HCAPLUS
- CN Glycine, N,N-bis[2-[bis(carboxymethyl)amino]ethyl]- (7CI, 8CI, 9CI) (CA INDEX NAME)



RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 38 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:798746 HCAPLUS

DN 135:326190

TI Polishing fluid and polishing method that remove reaction products without

damaging polished layer, **semiconductor** device and
semiconductor device fabrication

IN Misra, Sudhanshu; Roy, Pradip Kumar; Chetlur, Sundar Srinivasaan; Saxena, Vivek

PA Lucent Technologies, Inc., USA

SO U.S. Pat. Appl. Publ., 7 pp., Division of U.S. Ser. No. 483,785.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2001036796	A1	20011101	US 2001-894117	20010628
	US 6328633	B1	20011211	US 2000-483785	20000114
PRAI	US 2000-483785	A3	20000114		

AB A polishing fluid comprising a distributed organic phase and a continuous aqueous

phase, each phase comprising at least one complexing agent. The aqueous phase also having abrasive particles dispersed therein. Reaction products generated during polishing interact with the aqueous phase complexing agent to form water soluble metallic complexes, the water soluble metallic complexes diffuse to an organic/H₂O interface where they release complexing agent mols. in the aqueous phase and generate metal ions which interact with the organic phase complexing agent to form organometallic complexes. Further disclosed is a polishing method, a **semiconductor** device and **semiconductor** device fabrication method using the polishing fluid.

IC ICM B24B001-00

NCL 451036000

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 66

ST **chem mech** polishing fluid

IT Abrasives

Complexing agents

Fluids

Oxidizing agents

Polishing

Semiconductor device fabrication

Semiconductor devices

Surfactants

(polishing fluid and polishing method remove reaction products without damaging polished layer, **semiconductor** device and **semiconductor** device fabrication)

IT Sulfonates

RL: TEM (Technical or engineered material use); USES (Uses)

(polishing fluid and polishing method remove reaction products without damaging polished layer, **semiconductor** device and **semiconductor** device fabrication)

IT Emulsions

(stabilizers; polishing fluid and polishing method remove reaction products without damaging polished layer, **semiconductor** device and **semiconductor** device fabrication)

IT **60-00-4**, Ethylenediaminetetraacetic acid, uses 66-71-7,
 1,10-Phenanthroline **67-43-6**, Diethylenetriaminepentaacetic acid
 100-87-8, Benzenemethanesulfonic acid 148-24-3, 8-Hydroxyquinoline, uses
 1306-38-3, Ceria, uses 1309-48-4, Magnesium oxide, uses 1336-21-6,
 Ammonium hydroxide ((NH₄)(OH)) 1344-28-1, Alumina, uses 1510-16-3,
 Laurylsulfonic acid 6484-52-2, Nitric acid ammonium salt, uses
 7631-86-9, Silica, uses 7722-84-1, Hydrogen peroxide, uses 37275-48-2,
 Bipyridine

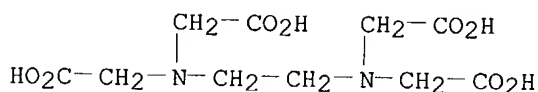
RL: TEM (Technical or engineered material use); USES (Uses)
(polishing fluid and polishing method remove reaction products without
damaging polished layer, **semiconductor** device and
semiconductor device fabrication)

IT 60-00-4, Ethylenediaminetetraacetic acid, uses 67-43-6,
Diethylenetriaminepentaacetic acid

RL: TEM (Technical or engineered material use); USES (Uses)
(polishing fluid and polishing method remove reaction products without
damaging polished layer, **semiconductor** device and
semiconductor device fabrication)

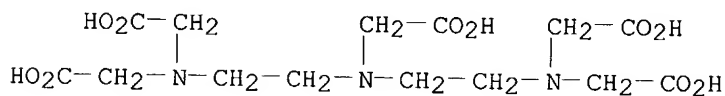
RN 60-00-4 HCAPLUS

CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



RN 67-43-6 HCAPLUS

CN Glycine, N,N-bis[2-[bis(carboxymethyl)amino]ethyl]- (7CI, 8CI, 9CI) (CA INDEX NAME)



L114 ANSWER 39 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:792317 HCAPLUS

DN 135:332781

TI **Cleaning** agents for **semiconductor** substrates

IN Kakizawa, Masahiko; Umekita, Ken-ichi; Hayashida, Ichiro

PA Wako Pure Chemical Industries, Ltd., Japan

SO U.S., 12 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6310019	B1	20011030	US 2000-610657	20000705
	US 6534458	B1	20030318	US 2000-712904	20001116
	US 2002016272	A1	20020207	US 2001-923962	20010808
	US 6716803	B2	20040406		
	US 2004077512	A1	20040422	US 2003-682918	20031014
PRAI	US 2000-610657	A3	20000705		
	US 2000-712904	A3	20001116		
	US 2001-923962	A3	20010808		
OS	MARPAT 135:332781				

AB A **cleaning** agent for a **semiconductor** substrate
comprises a polyoxyalkylene alkynediol ether and a quaternary ammonium
compound. The **cleaning** agents are useful for semi-conductor
substrate, particularly, one having copper wirings on its surface. The
cleaning agent and the method have made it possible to control a
speed of etching on silicone oxide so as to remove impurities adsorbed on
copper wirings and silicone oxide on a surface of a semi-conductor

substrate having copper wirings on its surface, such as copper oxides and particles, without causing corrosion or oxidation of copper wirings nor causing roughness on the surface.

IC ICM C11D001-835

ICS H01L021-306

NCL 510175000

CC 46-6 (Surface Active Agents and Detergents)

Section cross-reference(s): 76

ST **cleaning** agent **semiconductor** substrate

IT Detergents

Semiconductor devices

(**cleaning** agents for **semiconductor** substrates)

IT Quaternary ammonium compounds, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(**cleaning** agents for **semiconductor** substrates)

IT Polyoxyalkylenes, uses

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

(ethers with alkynediols; **cleaning** agents for

semiconductor substrates)

IT 9014-85-1 182211-02-5

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

(**cleaning** agents for **semiconductor** substrates)

IT 75-59-2, Tetramethylammonium hydroxide 123-41-1, Trimethyl-2-hydroxyethylammonium hydroxide

RL: TEM (Technical or engineered material use); USES (Uses)

(**cleaning** agents for **semiconductor** substrates)

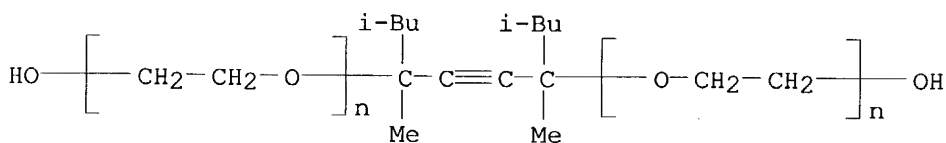
IT 9014-85-1 182211-02-5

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

(**cleaning** agents for **semiconductor** substrates)

RN 9014-85-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α,α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



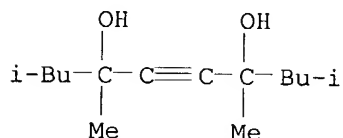
RN 182211-02-5 HCAPLUS

CN Oxirane, methyl-, polymer with oxirane, ether with 2,4,7,9-tetramethyl-5-decyne-4,7-diol (2:1) (9CI) (CA INDEX NAME)

CM 1

CRN 126-86-3

CMF C14 H26 O2



CM 2

CRN 9003-11-6

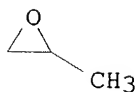
CMF (C3 H6 O . C2 H4 O)x

CCI PMS

CM 3

CRN 75-56-9

CMF C3 H6 O



CM 4

CRN 75-21-8

CMF C2 H4 O



RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 40 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:632162 HCAPLUS

DN 135:218722

TI Positive-working photoresist composition containing acetylene alcohol derivative

IN Kodama, Kunihiro; Sato, Kenichiro; Aogo, Toshiaki

PA Fuji Photo Film Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 39 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 2001235867	A2	20010831	JP 2000-47907	20000224
PRAI	JP 2000-47907		20000224		

AB The photoresist composition comprises (A) a compound for generating an acid by irradiation of actinic ray or radiation, (B) a resin having monocyclic or polycyclic aliphatic hydrocarbon structure and decomposing by an acid to

increase solubility in an alkaline developer, and (C) an acetylene alc. derivative

Alternatively, the composition comprises (A), (C), (D) a compound having an acid-decomposable group and showing increased dissoln. rate by acid effect in an alkaline developer for inhibiting dissoln. of a low-mol. compound having mol. weight ≤ 3000 , and (E) a water-insol. and alkali developer-soluble resin. Optionally, the composition comprises a N-containing basic compound and/or a

F-type and/or silicone-type **surfactant**. The composition provides high sensitivity in ArF excimer laser lithog., good developability with suppressed defects, resolution, and pattern profile.

IC ICM G03F007-039

ICS C08K005-00; C08K005-05; C08K005-16; C08L101-12; G03F007-004; G03F007-032; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 76

ST pos working photoresist compn acetylenic alc deriv

IT Positive photoresists

Semiconductor device fabrication

Surfactants

(pos.-working photoresist composition containing acetylene alc. derivative)

IT Polysiloxanes, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(**surfactant**, KP 341, Troysol S 366; pos.-working photoresist composition containing acetylene alc. derivative)

IT 9014-85-1

RL: MOA (Modifier or additive use); USES (Uses)
(**Surfynol 440**, **Surfynol 465**; pos.-working photoresist composition containing acetylene alc. derivative)

IT 144089-15-6, Triphenylsulfonium perfluorooctane sulfonate 194999-85-4, Bis(4-tert-butylphenyl)iodonium perfluorobutanesulfonate

RL: TEM (Technical or engineered material use); USES (Uses)

(acid generator; pos.-working photoresist composition containing acetylene

alc. derivative)

IT 177080-68-1P, 2-Methyl-2-adamantane methacrylate-mevalonic lactone methacrylate copolymer

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(acid-decomposable resin; pos.-working photoresist composition containing acetylene alc. derivative)

IT 195000-67-0 195154-83-7 216308-45-1, Methacrylic acid-2-methyl-2-adamantane methacrylate-mevalonic lactone methacrylate copolymer

250378-10-0 288303-55-9 297156-40-2 304441-22-3 324770-96-9
357413-69-5 357413-70-8 357413-71-9

RL: TEM (Technical or engineered material use); USES (Uses)
(acid-decomposable resin; pos.-working photoresist composition containing acetylene alc. derivative)

IT 122752-67-4, Cholic acid tert-butyl ester

RL: TEM (Technical or engineered material use); USES (Uses)

(dissoln. regulator; pos.-working photoresist composition containing

acetylene

alc. derivative)

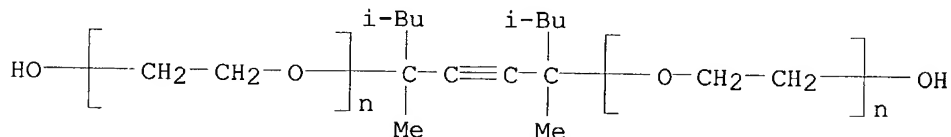
IT 66003-78-9, Triphenylsulfonium triflate 144317-44-2, Triphenylsulfonium perfluorobutanesulfonate

RL: TEM (Technical or engineered material use); USES (Uses)

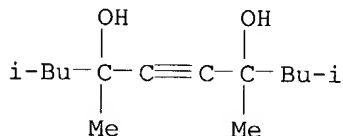
(photoacid generator; pos.-working photoresist composition containing

acetylene

- alc. derivative)
- IT 126-86-3, Surfynol 104 58968-73-3,
Surfynol PC 357426-77-8, Surfynol E 1004
RL: MOA (Modifier or additive use); USES (Uses)
(pos.-working photoresist composition containing acetylene alc. derivative)
- IT 484-47-9D, 2,4,5-Triphenylimidazole, amine compound 3001-72-7D,
1,5-Diazabicyclo[4.3.0]-5-nonene, amine compound 24544-04-5D,
2,6-Diisopropylaniline, amine compound
RL: TEM (Technical or engineered material use); USES (Uses)
(pos.-working photoresist composition containing acetylene alc. derivative)
- IT 137462-24-9, Megafac F 176 216679-67-3, Megafac R 08
RL: TEM (Technical or engineered material use); USES (Uses)
(surfactant; pos.-working photoresist composition containing acetylene alc. derivative)
- IT 9014-85-1
RL: MOA (Modifier or additive use); USES (Uses)
(Surfynol 440, Surfynol 465; pos.-working photoresist composition containing acetylene alc. derivative)
- RN 9014-85-1 HCAPLUS
- CN Poly(oxy-1,2-ethanediyl), α,α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)]



- IT 126-86-3, Surfynol 104 58968-73-3,
Surfynol PC 357426-77-8, Surfynol E 1004
RL: MOA (Modifier or additive use); USES (Uses)
(pos.-working photoresist composition containing acetylene alc. derivative)
- RN 126-86-3 HCAPLUS
- CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



- RN 58968-73-3 HCAPLUS
- CN Surfynol PC (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

- RN 357426-77-8 HCAPLUS
- CN Surfynol E 1004 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L114 ANSWER 41 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:340542 HCAPLUS
DN 134:335358

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

TI Copper metallization structure in an integrated circuit
 IN Oskam, Gerko; Searson, Peter; Vereecken, Philippe; Long, John; Hoffmann, Peter
 PA USA
 SO U.S. Pat. Appl. Publ., 12 pp., Cont. of U.S. Ser. No. 184,579.
 CODEN: USXXCO

DT Patent
 LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2001001081	A1	20010510	US 2000-733975	20001212
	US 6309969	B1	20011030	US 1998-184579	19981103
PRAI	US 1998-184579	A1	19981103		

AB The invention is directed to the use of Cu as via and interconnect structures for an integrated circuit. The process in accordance with a preferred embodiment produces an interconnect layer of continuous Cu with superior adhesion while requiring only a min. number of steps for its production

This process addresses the current need in **semiconductor** manufacturing for reliable and performance-oriented vias and interconnect structures, while not being susceptible to many of the problems which plague the use of Al for similar structures. Fabrication of an integrated circuit in accordance with a preferred embodiment of the invention begins with the formation of **semiconductor** devices on a Si wafer. Next, an intermetallic dielec. layer (IDL) is formed by materials such as SiO₂ (SiO₂), polyimide, or Si nitride over the devices. This step is followed by the laying of a diffusion barrier layer on the IDL surface. The resulting product is then exposed to an electrochem. deposition or electroplating stage for the formation of a Cu layer directly on top of the diffusion barrier layer. In accordance with a preferred embodiment of the invention, a variable voltage is applied to the electrochem. process in 2 different stages. The 1st stage produces nucleation of a high d. of clusters and the second stage permits diffusion limited growth of the clusters so as to produce a continuous Cu film layer.

IC ICM H01L021-44

NCL 438687000

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 72, 75

ST copper metalization integrated circuit

IT Vapor deposition process

(chemical, diffusion barrier; copper metalization structure in integrated circuit)

IT Diffusion barrier

Electric contacts

Integrated circuits

Semiconductor device fabrication

(copper metalization structure in integrated circuit)

IT Polyimides, processes

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(copper metalization structure in integrated circuit)

IT Electrodeposition

Interconnections (electric)

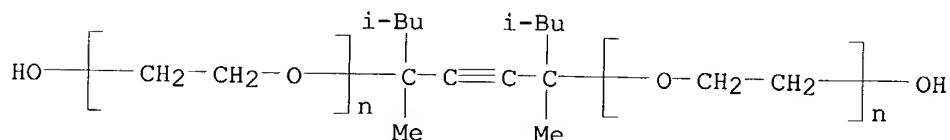
(copper; copper metalization structure in integrated circuit)

IT Vapor deposition process

(phys., diffusion barrier; copper metalization structure in integrated circuit)

IT 11116-16-8, Titanium nitride 12033-89-5, Silicon nitride, processes

- RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(copper metalization structure in integrated circuit)
- IT 7631-86-9, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(dielec.; copper metalization structure in integrated circuit)
- IT 1184-64-1, Copper carbonate 1336-21-6, Ammonium hydroxide ((NH₄)(OH))
7320-34-5 7757-79-1, Nitric acid potassium salt, processes 10043-35-3, Boric acid, processes 15191-80-7, Copper pyrophosphate (Cu₂P₂O₇)
16872-11-0 20427-59-2, Copper hydroxide
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(electrolytic bath; copper metalization structure in integrated circuit)
- IT 7440-50-8, Copper, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(metalization; copper metalization structure in integrated circuit)
- IT 81556-56-1, Indium alloy, In, Ga
RL: DEV (Device component use); USES (Uses)
(ohmic contact; copper metalization structure in integrated circuit)
- IT 7440-21-3, Silicon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(substrate; copper metalization structure in integrated circuit)
- IT 9014-85-1, **Surfynol** 465
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(**surfactant**; copper metalization structure in integrated circuit)
- IT 9014-85-1, **Surfynol** 465
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(**surfactant**; copper metalization structure in integrated circuit)
- RN 9014-85-1 HCAPLUS
- CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)]



L114 ANSWER 42 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:312397 HCAPLUS
DN 134:335158
TI Method to eliminate dishing of copper interconnects
IN Liu, Chung-shi; Yu, Chen-hua
PA Taiwan Semiconductor Manufacturing Company, Taiwan
SO U.S., 5 pp.
CODEN: USXXAM
DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6225223	B1	20010501	US 1999-374297	19990816
PRAI	US 1999-374297		19990816		
AB	A method of forming an interconnect, comprising the following steps:. A dielec. layer, having an upper surface, is formed over a semiconductor structure. A trench, having side walls and a bottom, is formed within the dielec. layer. A barrier layer is then formed over the dielec. layer and lining the trench's side walls and bottom. A 1st Cu layer is deposited on the barrier layer, filling the lined trench and blanket filling the barrier layer covered dielec. layer. The 1st Cu layer is planarized , exposing the upper surface of the dielec. layer and forming a dished Cu filled trench. A 2nd Cu layer is selectively deposited on the dished Cu filled trench by either electroless plating or CVD. The 2nd Cu layer extending above the upper surface of the dielec. layer. The 2nd Cu layer is then planarized to form an essentially planar Cu filled trench, or interconnect, level with the upper surface of said dielec. layer.				
IC	ICM H01L021-44				
NCL	438687000				
CC	76-2 (Electric Phenomena)				
ST	copper interconnect without dishing				
IT	Polishing (chemical-mech.; in method to eliminate dishing of copper interconnects)				
IT	Vapor deposition process (chemical; in method to eliminate dishing of copper interconnects)				
IT	Coating process (electroless; in method to eliminate dishing of copper interconnects)				
IT	Coating process Dielectric films Diffusion barrier Electrodeposition Polishing (in method to eliminate dishing of copper interconnects)				
IT	Interconnections (electric) (method to eliminate dishing of copper interconnects)				
IT	7440-25-7, Tantalum, processes 12033-62-4, Tantalum mononitride RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (barrier layer; in method to eliminate dishing of copper interconnects)				
IT	50-00-0, Formaldehyde, uses 60-00-4, EDTA, uses 7758-98-7, Cupric sulfate, uses RL: NUU (Other use, unclassified); USES (Uses) (bath; in method to eliminate dishing of copper interconnects)				
IT	139566-53-3, Trimethylvinylsilyl hexafluoroacetylacetonato copper RL: NUU (Other use, unclassified); USES (Uses) (copper precursor; in method to eliminate dishing of copper interconnects)				
IT	12033-89-5, Silicon nitride, uses RL: TEM (Technical or engineered material use); USES (Uses) (in method to eliminate dishing of copper interconnects)				
IT	7440-50-8P, Copper, processes RL: PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses) (method to eliminate dishing of copper interconnects)				
IT	95-14-7, 1H-Benzotriazole 1344-28-1, Alumina, uses 7664-41-7D,				

Ammonia, compds., uses 7697-37-2, Nitric acid, uses 7722-84-1,
Hydrogen peroxide, uses

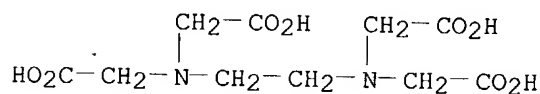
RL: NUU (Other use, unclassified); USES (Uses)
(polishing slurry; in method to eliminate dishing of copper
interconnects)

IT 60-00-4, EDTA, uses

RL: NUU (Other use, unclassified); USES (Uses)
(bath; in method to eliminate dishing of copper interconnects)

RN 60-00-4 HCAPLUS

CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 43 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:221983 HCAPLUS

DN 134:230594

TI Prevention of Cu dendrite formation and growth from copper alloy lines
into dielectrics

IN Schonauer, Diana M.; Avanzino, Steven C.; Yang, Kai

PA Advanced Micro Devices, Inc., USA

SO U.S., 6 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6207569	B1	20010327	US 1998-206163	19981207
PRAI	US 1998-206163		19981207		
AB	The formation and/or growth of dendrites emanating from Cu or Cu alloy lines into a bordering open dielec. field are prevented or substantially reduced by chemical removing a portion of the surface from the dielec. field and from between the lines after CMP with a solution comprising HF and H2O; Embodiments include removing up to 50 Å of Si oxide by treating the wafer in a spray acid processor with a solution containing HF and deionized H2O at a H2O to acid ratio of .apprx.100:1 to .apprx.250:1.				
IC	ICM H01L021-302				
	ICS H01L021-461				
NCL	438692000				
CC	76-2 (Electric Phenomena)				
ST	prevention copper dendrite silica dielec device fabrication				
IT	Polishing (chemical-mech.; in prevention of copper dendrite formation and growth from copper alloy lines into dielects.)				
IT	Complexing agents (copper; in prevention of copper dendrite formation and growth from copper alloy lines into dielects.)				
IT	Etching Surfactants (in prevention of copper dendrite formation and growth from copper alloy lines into dielects.)				
IT	Dendrites (crystal)				

Metal lines
(prevention of copper dendrite formation and growth from copper alloy lines into dielects.)

IT **Semiconductor** device fabrication
(prevention of copper dendrite formation and growth from copper alloy lines into dielects. during)

IT Copper alloy, base
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(prevention of copper dendrite formation and growth from copper alloy lines into dielects.)

IT 56-40-6, Glycine, processes 60-00-4, EDTA, processes 338-70-5, processes 3715-17-1, Tartrate, processes 16887-00-6, Chloride, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(copper complexor; in prevention of copper dendrite formation and growth from copper alloy lines into dielects.)

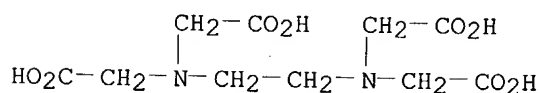
IT 7664-39-3, Hydrogen fluoride, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(etchant; in prevention of copper dendrite formation and growth from copper alloy lines into dielects.)

IT 7440-50-8, Copper, processes 7631-86-9, Silica, processes
RL: PEP (Physical, engineering or chemical process); REM (Removal or disposal); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(prevention of copper dendrite formation and growth from copper alloy lines into dielects.)

IT 60-00-4, EDTA, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(copper complexor; in prevention of copper dendrite formation and growth from copper alloy lines into dielects.)

RN 60-00-4 HCAPLUS

CN Glycine, N,N'-1,2-ethanediyldis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 44 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:133886 HCAPLUS
DN 134:200519
TI Method for positive-working resist pattern formation using ArF excimer laser
IN Nakao, Hajime; Sato, Kenichiro
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 89 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

PI JP 2001051421 A2 20010223 JP 1999-228617 19990812
 PRAI JP 1999-228617 19990812
 AB The title method includes the steps of coating a resist composition containing a resin, which increasing the solubility in an alkali by reacting with an acid, and developing a pattern in an organic alkali solution in the presence of a **surfactant**. The acid sensitive resin has aliphatic poly-alicyclic structure. The method including the acid-sensitive resin and the developing solution including a **surfactant** provides the even characteristics between a complicated pattern area and an isolated pattern area.

IC ICM G03F007-039
 ICS G03F007-32

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 76

ST pos working resist ArF excimer laser

IT Light-sensitive materials
 Photoresists
Semiconductor device fabrication
 (method for resist pattern formation using ArF excimer laser)

IT 79-10-7, Acrylic acid, reactions 79-41-4, Methacrylic acid, reactions 108-67-8, Mesitylene, reactions 945-51-7, Diphenyl sulfoxide 2795-39-3 12027-06-4, Ammonium iodide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (photoacid generator for pos.-working resist pattern formation)

IT 83-44-3DP, Deoxycholic acid, reaction product with ethoxymethyl chloride 3188-13-4DP, Ethoxymethyl chloride, reaction product with deoxycholic acid 81416-41-3P 244176-33-8P 250598-43-7P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (photoacid generator for pos.-working resist pattern formation)

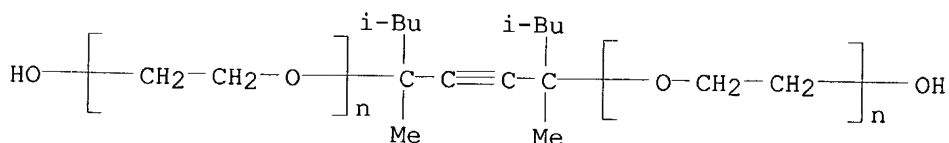
IT 251365-67-0P 251365-69-2P 258341-99-0P 327069-16-9P
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (photoacid generator for pos.-working resist pattern formation)

IT 683-10-3, Laurylbetain 1112-67-0, Tetrabutylammonium chloride 5810-42-4, Tetrapropylammonium chloride 9002-92-0, Poly(oxyethylene) lauryl ether **9014-85-1, Surfynol** 440 9016-45-9, Nonion NS 210 9038-95-3, FTD 89 197166-05-5 327172-52-1
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**surfactant** for pos.-working resist pattern formation)

IT **9014-85-1, Surfynol** 440
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**surfactant** for pos.-working resist pattern formation)

RN 9014-85-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)]



L114 ANSWER 45 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:64307 HCAPLUS

DN 134:124734

TI Compositions and processes for spin etch **planarization** in **semiconductor** device fabrication

IN Levert, Joseph; Towery, Daniel L.

PA Alliedsignal Inc., USA

SO PCT Int. Appl., 38 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001006555	A1	20010125	WO 2000-US18723	20000710
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 2001054706	A1	20011227	US 1999-356487	19990719
	EP 1198827	A1	20020424	EP 2000-947151	20000710
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
	JP 2003505859	T2	20030212	JP 2001-510911	20000710
	US 2003073311	A1	20030417	US 2002-222230	20020815
PRAI	US 1999-356487	A	19990719		
	WO 2000-US18723	W	20000710		

AB The present invention describes methods and chemical compns. for the spin etch **planarization** of surfaces, particularly Cu and Ta. An etching solution is brought into contact with the upper face of a spinning wafer through a nozzle, preferably an oscillating nozzle. The etching solution has a composition that oxidizes the spinning surface, forming a passivation layer thereon. The etching solution further contains reactants for removing the passivation layer exposing the underlying surface to further reaction, leading to the desired etching of the surface. The characteristics of the etching solution are adjusted such that reactant diffusion to lower regions of the surface limits the rate of etching. Faster reaction occurs at higher regions of the surface lying in more rapidly moving etching solution resulting in the desired **planarization**.

IC ICM H01L021-321

ICS C23F003-06

CC 76-3 (Electric Phenomena)

ST spin etching polishing **semiconductor** device fabrication; **chem mech** polishing device fabrication; oxidn etching device fabrication

IT Alcohols, processes

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(aliphatic; in compns. and processes for spin etch **planarization** in **semiconductor** device fabrication)

IT **Surfactants**

(anionic; in compns. and processes for spin etch **planarization** in **semiconductor** device fabrication)

- IT **Surfactants**
(cationic; in compns. and processes for spin etch **planarization** in **semiconductor** device fabrication)
- IT Polishing
(**chemical-mech.**; compns. and processes for spin etch **planarization** in **semiconductor** device fabrication)
- IT Etching
Integrated circuits
Semiconductor device fabrication
(compns. and processes for spin etch **planarization** in **semiconductor** device fabrication)
- IT Hydrocarbons, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(fluoro; in compns. and processes for spin etch **planarization** in **semiconductor** device fabrication)
- IT Nozzles
(for spin etch **planarization** in **semiconductor** device fabrication)
- IT Oxidizing agents
Wetting agents
(in compns. and processes for spin etch **planarization** in **semiconductor** device fabrication)
- IT Amines, processes
Carboxylic acids, processes
Gelatins, processes
Phenols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in compns. and processes for spin etch **planarization** in **semiconductor** device fabrication)
- IT Passivation
(in spin etch **planarization** in **semiconductor** device fabrication)
- IT **Surfactants**
(nonionic; in compns. and processes for spin etch **planarization** in **semiconductor** device fabrication)
- IT **Surfactants**
(organic; in compns. and processes for spin etch **planarization** in **semiconductor** device fabrication)
- IT Etching
(photochem.; for **planarization** in **semiconductor** device fabrication)
- IT Oxidation
(surface; in spin etch **planarization** in **semiconductor** device fabrication)
- IT 7440-25-7, Tantalum, processes 7440-50-8, Copper, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(compns. and processes for spin etch **planarization** of)
- IT 57-55-6, Propyleneglycol, processes 60-00-4, EDTA, processes
62-76-0, Sodium oxalate 64-17-5, Ethanol, processes 64-19-7, Acetic acid, processes 67-56-1, Methanol, processes 68-04-2, Trisodium citrate 71-23-8, n-Propanol, processes 75-89-8 77-92-9, Citric acid, processes 87-69-4, Tartaric acid, processes 88-27-7, 2,6-Di-tert-butyl-4-[(dimethylamino)methyl]phenol 89-65-6, Erythorbic acid 95-14-7, 1H-Benzotriazole 102-71-6, Triethanolamine, processes 104-75-6, 2-Ethylhexylamine 107-21-1, 1,2-Ethanediol, processes 128-37-0, Agidol, processes 139-33-3 144-62-7, Oxalic acid,

processes 288-36-8, 1,2,3-Triazole 288-88-0, 1H-1,2,4-Triazole
 288-94-8, 1H-Tetrazole 1303-96-4, Borax 1310-73-2, Sodium hydroxide,
 processes 1333-39-7, Phenolsulfonic acid 1336-21-6, Ammonium hydroxide
 6915-15-7, Malic acid 7439-98-7D, Molybdenum, salts, processes
 7440-25-7D, Tantalum, salts, processes 7440-50-8D, Copper, salts,
 processes 7447-40-7, Potassium chloride, processes 7631-95-0, Sodium
 molybdate 7631-99-4, Sodium nitrate, processes 7647-01-0, Hydrogen
 chloride, processes 7664-38-2, Phosphoric acid, processes 7664-39-3,
 Hydrogen fluoride, processes 7664-93-9, Sulfuric acid, processes
 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen peroxide,
 processes 7733-02-0, Zinc sulfate 7758-89-6, Cuprous chloride
 7758-98-7, Cupric sulfate, processes 7775-09-9, Sodium chlorate (NaClO3)
 8061-51-6, Sodium lignosulfonate 9002-89-5, Polyvinyl alcohol
 9002-92-0, Poly(oxyethylene)lauryl ether 9004-32-4,
 Carboxymethylcellulose 12125-01-8, Ammonium fluoride 14066-19-4,
 Monohydrogen phosphate, processes 14265-44-2, Phosphate, processes
 16887-00-6, Chloride, processes 17084-08-1, Hexafluorosilicate
 26053-72-5, Diphenylsulfamic acid 27846-09-9, Iron monochloride
 89800-24-8, Laprol 602

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)

(in compns. and processes for spin etch **planarization** in
semiconductor device fabrication)

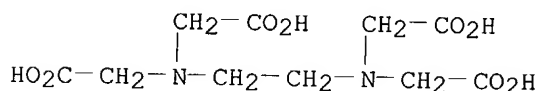
IT 60-00-4, EDTA, processes 139-33-3

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)

(in compns. and processes for spin etch **planarization** in
semiconductor device fabrication)

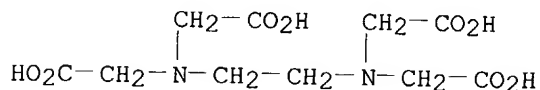
RN 60-00-4 HCAPLUS

CN Glycine, N,N'-1,2-ethanediyldis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



RN 139-33-3 HCAPLUS

CN Glycine, N,N'-1,2-ethanediyldis[N-(carboxymethyl)-, disodium salt (9CI)
 (CA INDEX NAME)



● 2 Na

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 46 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:900729 HCAPLUS

DN 134:64904

TI Abrasive solution and method for **chemically-mechanically**
 polishing a precious metal surface for **semiconductor** device

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

fabrication
 IN Beitel, Gerhard; Sanger, Annette; Unger, Eugen
 PA Infineon Technologies Ag, Germany
 SO PCT Int. Appl., 11 pp.
 CODEN: PIXXD2
 DT Patent
 LA German
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000077107	A1	20001221	WO 2000-DE1911	20000614
	W: CN, JP, KR, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	DE 19927286	A1	20010118	DE 1999-19927286	19990615
	US 2002081853	A1	20020627	US 2001-23136	20011217
PRAI	DE 1999-19927286	A	19990615		
	WO 2000-DE1911	A1	20000614		

AB The invention relates to an abrasive solution and a method for **chem** .-mech. polishing a precious metal surface. The inertness of the precious metal surface is efficiently reduced by adding a complexing agent.

IC ICM C09G001-02
 ICS C09K003-14; C23F003-00; H01L021-306; H01L021-321

CC 76-3 (Electric Phenomena)
 Section cross-reference(s): 66

ST abrasive soln **chem mech** polishing precious metal;
 oxidn complexing agent polishing precious metal; FRAM fabrication; DRAM fabrication

IT Memory devices
 (DRAM (dynamic random access); abrasive solution for **chemical-mech.** polishing precious metal surface for **semiconductor** device fabrication using complexing and oxidation agents)

IT Abrasives
 Complexing agents
 Ferroelectric memory devices
 Oxidizing agents
Semiconductor device fabrication
 Solutions

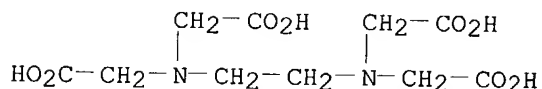
Surfactants
 (abrasive solution for **chemical-mech.** polishing precious metal surface for **semiconductor** device fabrication using complexing and oxidation agents)

IT Crown ethers
 RL: NUU (Other use, unclassified); USES (Uses)
 (abrasive solution for **chemical-mech.** polishing precious metal surface for **semiconductor** device fabrication using complexing and oxidation agents)

IT Precious metals
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (abrasive solution for **chemical-mech.** polishing precious metal surface for **semiconductor** device fabrication using complexing and oxidation agents)

IT Polishing
 (**chemical-mech.**; abrasive solution for **chemical-mech.** polishing precious metal surface for **semiconductor** device fabrication using complexing and oxidation

agents)
 IT Heterocyclic compounds
 RL: NUU (Other use, unclassified); USES (Uses)
 (nitrogen; abrasive solution for **chemical-mech.** polishing
 precious metal surface for **semiconductor** device fabrication
 using complexing and oxidation agents)
 IT 57-12-5, Cyanide, uses 60-00-4, EDTA, uses 77-92-9, Citric
 acid, uses 1333-82-0, Chromium oxide (CrO3) 7664-93-9, Sulfuric acid,
 uses 7722-84-1, Hydrogen peroxide, uses 8007-56-5, Aqua regia
 10028-15-6, Ozone, uses 11104-59-9, Chromate 14333-13-2, Permanganate
 14380-61-1, Hypochlorite 14866-68-3, Chlorate 15092-81-6,
 Peroxodisulfate 15454-31-6, Iodate 15541-45-4, Bromate 16887-00-6,
 Chloride, uses 20074-52-6D, Iron(3+), compds., uses 24959-67-9,
 Bromide, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (abrasive solution for **chemical-mech.** polishing precious
 metal surface for **semiconductor** device fabrication using
 complexing and oxidation agents)
 IT 7439-88-5, Iridium, processes 7440-04-2, Osmium, processes 7440-05-3,
 Palladium, processes 7440-06-4, Platinum, processes 7440-16-6,
 Rhodium, processes 7440-18-8, Ruthenium, processes 7440-22-4, Silver,
 processes 7440-57-5, Gold, processes
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or
 engineered material use); PROC (Process); USES (Uses)
 (abrasive solution for **chemical-mech.** polishing precious
 metal surface for **semiconductor** device fabrication using
 complexing and oxidation agents)
 IT 60-00-4, EDTA, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (abrasive solution for **chemical-mech.** polishing precious
 metal surface for **semiconductor** device fabrication using
 complexing and oxidation agents)
 RN 60-00-4 HCAPLUS
 CN Glycine, N,N'-1,2-ethanediyldis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 47 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2000:756045 HCAPLUS
 DN 133:316429
 TI Cleaning solution for substrates of electronic devices without corrosion
 of metals
 IN Ishikawa, Norio; Abe, Yumiko; Mori, Kiyoto
 PA Kanto Kagaku Kabushiki Kaisha, Japan
 SO Eur. Pat. Appl., 11 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 1047121	A1	20001025	EP 2000-108565	20000419

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO

JP 2001007071	A2	20010112	JP 2000-112882	20000414
US 6730644	B1	20040504	US 2000-550152	20000417
CN 1271000	A	20001025	CN 2000-106046	20000420
TW 541334	B	20030711	TW 2000-89107414	20000420
US 2004167047	A1	20040826	US 2004-783837	20040219
PRAI JP 1999-111569	A	19990420		
US 2000-550152	A3	20000417		

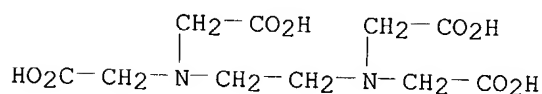
- AB The present invention relates to a cleaning solution capable of removing efficiently at the same time particles and metallic impurities from a substrate surface without corroding metallic materials. The cleaning solution for cleaning substrates of electronic materials comprises an organic acid compound and at least one selected from the group consisting of dispersants and **surfactants**.
- IC ICM H01L021-306
- ICS H05K003-26; C11D007-26; B08B003-08; C11D001-02; C11D001-66
- CC 76-3 (Electric Phenomena)
- Section cross-reference(s): 66
- ST cleaning soln **semiconductor** substrate; **surfactant**
dispersing agent org acid cleaning **semiconductor**
- IT **Surfactants**
(anionic; in cleaning solution for substrates of electronic devices without corrosion of metals)
- IT Polishing
(**chemical-mech.**; cleaning solution for substrates of electronic devices without corrosion of metals after)
- IT Cleaning
Decontamination
Impurities
Particles
Semiconductor device fabrication
Solutions
(cleaning solution for substrates of electronic devices without corrosion of metals)
- IT Dispersing agents
Surfactants
(in cleaning solution for substrates of electronic devices without corrosion of metals)
- IT Phosphates, uses
Polyphosphoric acids
RL: TEM (Technical or engineered material use); USES (Uses)
(in cleaning solution for substrates of electronic devices without corrosion of metals)
- IT **Surfactants**
(nonionic; in cleaning solution for substrates of electronic devices without corrosion of metals)
- IT Acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(organic; in cleaning solution for substrates of electronic devices without corrosion of metals)
- IT 9005-65-6, Rheodol Super TW-O 120
RL: TEM (Technical or engineered material use); USES (Uses)
(Rheodol Super TW-O 120; in cleaning solution for substrates of electronic devices without corrosion of metals)
- IT 7439-89-6, Iron, processes 7631-86-9, Silica, processes
RL: REM (Removal or disposal); PROC (Process)
(cleaning solution for substrates of electronic devices without corrosion of metals)

IT 67-63-0, 2-Propanol, uses 77-92-9, uses 83-86-3, Phytic acid
 87-69-4, uses 110-15-6, Butanedioic acid, uses 139-13-9 141-82-2,
 Propanedioic acid, uses 144-62-7, Ethanedioic acid, uses 1113-38-8,
 Ammonium oxalate 2466-09-3, Pyrophosphoric acid 3458-72-8, Triammonium
 citrate 4574-04-3, Tetradecyltrimethylammonium chloride 6283-27-8,
 Ammonium malate 6915-15-7 7632-50-0, Ammonium citrate 8061-51-6,
 Sorpol 9047K 9051-57-4, Newcol 560SF 9069-80-1, Demol AS 14307-43-8,
 Ammonium tartrate, uses 15574-09-1, Ammonium succinate 18815-40-2,
 Ammonium malonate **20824-56-0**, Diammonium
 ethylenediaminetetraacetate 55866-85-8, Newcol 707SF 90092-89-0,
 Nikkol TDP-8 302578-06-9, Disrol H 14N 302578-12-7, Polity 550
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in cleaning solution for substrates of electronic devices without
 corrosion of metals)

IT **20824-56-0**, Diammonium ethylenediaminetetraacetate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in cleaning solution for substrates of electronic devices without
 corrosion of metals)

RN 20824-56-0 HCAPLUS

CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)-, diammonium salt (9CI)
 (CA INDEX NAME)



● 2 NH₃

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 48 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2000:752117 HCAPLUS
 DN 133:328447
 TI Fabrication of **planarized** interconnect vias for integrated
 circuits using electroless plating and chemical mechanical polishing
 IN Chan, Lap; Ng, Hou Tee
 PA Chartered Semiconductor Manufacturing Ltd., Singapore
 SO U.S., 12 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6136693	A	20001024	US 1997-958427	19971027
	SG 71112	A1	20000321	SG 1998-900	19980430
PRAI	US 1997-958427	A	19971027		

AB An improved and new method for fabricating conducting vias between
 successive layers of conductive interconnection patterns in a
semiconductor integrated circuit was developed. The method uses a
 1st CMP step to form a barrier lined contact hole, deposition of Cu by
 electroless plating into the barrier lined contact hole, and a 2nd CMP
 step to remove overgrowth of Cu, thus producing coplanarity between the Cu

surface and the surrounding insulator surface.

IC ICM B05D005-12
ICS H01L021-4763; C23C014-32

NCL 438633000

CC 76-3 (Electric Phenomena)
Section cross-reference(s): 56, 72

ST **planarized** interconnect via electroless plating CMP integrated circuit fabrication

IT Sputtering
(barrier layer; in fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)

IT Vapor deposition process
(chemical, barrier layer; in fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)

IT Polishing
(chemical-mech.; fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)

IT Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); USES (Uses)
(copper electroplating agent; in fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)

IT MOSFET (transistors)
(fabrication of **planarized** interconnect vias for)

IT Electrodeposition
Integrated circuits
Interconnections (electric)
Semiconductor device fabrication
(fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)

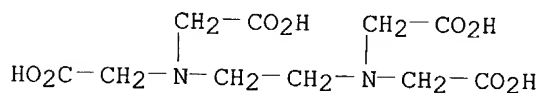
IT Cleaning
Contact holes
Dielectric films
Diffusion barrier
(in fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)

IT 1336-21-6, Ammonium hydroxide 1344-28-1, Alumina, uses 7681-55-2, Sodium iodate (NaIO3) 7722-84-1, Hydrogen peroxide, uses 7758-05-6 7775-09-9, Sodium chlorate 10421-48-4, Ferric nitrate
RL: NUU (Other use, unclassified); USES (Uses)
(CMP slurry; in fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)

IT 50-00-0, Formaldehyde, uses 60-00-4, EDTA, uses 75-59-2, Tetramethylammonium hydroxide 7758-98-7, Cupric sulfate, uses 25322-68-3
RL: NUU (Other use, unclassified); USES (Uses)
(copper electroplating agent; in fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)

IT 12033-62-4P, Tantalum nitride (TaN) 12058-38-7P, Tungsten nitride (WN) 25583-20-4P, Titanium nitride (TiN)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)

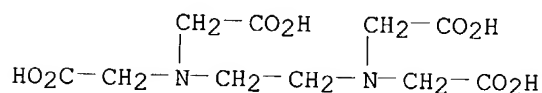
- (diffusion barrier; in fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)
- IT 7440-05-3P, Palladium, processes 7440-06-4P, Platinum, processes
 RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)
 (electrodeposition catalyst; in fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)
- IT 7440-50-8P, Copper, processes
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)
 (in fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)
- IT 64-19-7, Acetic acid, uses 7647-01-0, Hydrogen chloride, uses 7647-10-1, Palladium dichloride
 RL: NUU (Other use, unclassified); USES (Uses)
 (palladium catalyst precursor; in fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)
- IT 7664-39-3, Hydrogen fluoride, uses 10025-65-7, Platinum dichloride 12125-01-8, Ammonium fluoride
 RL: NUU (Other use, unclassified); USES (Uses)
 (platinum catalyst precursor; in fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)
- IT 60-00-4, EDTA, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (copper electroplating agent; in fabrication of **planarized** interconnect vias for integrated circuits using electroless plating and chemical mech. polishing)
- RN 60-00-4 HCAPLUS
 CN Glycine, N,N'-1,2-ethanediyldis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)]



RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 49 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2000:537294 HCAPLUS
 DN 133:257342
 TI Novel cleaning solutions for polysilicon film post **chemical mechanical** polishing
 AU Pan, Tung Ming; Lei, Tan Fu; Chen, Chao Chyi; Chao, Tien Sheng; Liaw, Ming Chi; Yang, Wen Lu; Tsai, Ming Shih; Lu, C. P.; Chang, W. H.
 CS Department of Electronics Engineering and Institute of Electronics, National Chiao-Tung University, Hsinchu, 300, Taiwan
 SO IEEE Electron Device Letters (2000), 21(7), 338-340
 CODEN: EDLEDZ; ISSN: 0741-3106
 PB Institute of Electrical and Electronics Engineers
 DT Journal

LA English
 AB Novel cleaning solns. were developed for post-CMP process,
surfactant tetramethylammonium hydroxide (TMAH) and/or chelating
 agent ethylenediamine tetra acetic acid (EDTA) were added into the diluted
 ammonium hydroxide (NH₄OH + H₂O) alkaline aqueous solution to enhance removal
 of metallic and organic contamination. From the exptl. result, the particle and
 metal removal efficiency and the elec. characteristics are significantly
 improved for post-CMP cleaning.
 CC 66-4 (Surface Chemistry and Colloids)
 Section cross-reference(s): 76
 ST cleaning soln polysilicon film **chem mech** polishing
 IT Polishing
 (chemical-mech.; novel cleaning solns. for polysilicon
 film post **chemical mech.** polishing)
 IT Cleaning
Semiconductor materials
Surfactants
 (novel cleaning solns. for polysilicon film post **chemical**
mech. polishing)
 IT Contamination (electronics)
 (removal; novel cleaning solns. for polysilicon film post **chem**
. mech. polishing)
 IT 7440-21-3P, Polysilicon, properties
 RL: PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or
 engineered material use); PREP (Preparation); USES (Uses)
 (novel cleaning solns. for polysilicon film post **chemical**
mech. polishing)
 IT 60-00-4, EDTA, reactions 75-59-2, Tetramethylammonium hydroxide
 1336-21-6, Ammonium hydroxide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (novel cleaning solns. for polysilicon film post **chemical**
mech. polishing)
 IT 60-00-4, EDTA, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (novel cleaning solns. for polysilicon film post **chemical**
mech. polishing)
 RN 60-00-4 HCAPLUS
 CN Glycine, N,N'-1,2-ethanediyldis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



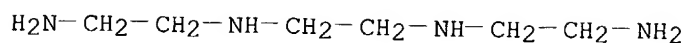
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 50 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2000:529152 HCAPLUS
 DN 133:128667
 TI Processing and post-processing amide compositions and methods using in
 removal of electronic contaminants from substrates and equipment
 IN Vaartstra, Brian A.
 PA Micron Technology, Inc., USA
 SO U.S., 9 pp.
 CODEN: USXXAM
 DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6095161	A	20000801	US 1996-785659	19960117
PRAI	US 1996-785659		19960117		
OS	MARPAT 133:128667				
AB	A composition for use in processing and cleaning substrates includes (I): $R_1C(O)NR_2[(CR_3R_4)xNR_5]y[C(O)]zR_6$, wherein each of R_1 , R_2 , R_3 , R_4 , R_5 , and R_6 is independently H or an organic group, $x = 1-10$, $y = 0-10$, and $z = 0-1$. I is preparable by a condensation reaction of a carboxylic acid and an amine. A method of processing a substrate includes, for example, planarizing the substrate surface with a processing composition comprising a compound of Formula I. A method of cleaning a substrate and processing equipment after, for example, planarizing a substrate surface with an abrasive material includes cleaning the substrate surface and processing equipment with the cleaning composition				
IC	ICM C25F003-30				
NCL	134001300				
CC	76-3 (Electric Phenomena) Section cross-reference(s): 66				
ST	amide cleaning soln decontamination electronics				
IT	Condensation reaction (condensation reaction of a carboxylic acid and an amine in preparation of amides for cleaning)				
IT	Amines, reactions Carboxylic acids, reactions RL: RCT (Reactant); RACT (Reactant or reagent) (condensation reaction of a carboxylic acid and an amine in preparation of amides for cleaning)				
IT	Cleaning Decontamination Polishing Semiconductor device fabrication (processing and post-processing amide compns. and methods using in removal of electronic contaminants from substrates and equipment)				
IT	Amides, uses RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (processing and post-processing amide compns. and methods using in removal of electronic contaminants from substrates and equipment)				
IT	111-40-0, Diethylenetriamine 112-24-3 112-80-1, Oleic acid, reactions 142-62-1, Hexanoic acid, reactions RL: RCT (Reactant); RACT (Reactant or reagent) (condensation reaction of a carboxylic acid and an amine in preparation of amides for cleaning)				
IT	16445-01-5P 285132-34-5P RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (processing and post-processing amide compns. and methods using in removal of electronic contaminants from substrates and equipment)				
IT	112-24-3 RL: RCT (Reactant); RACT (Reactant or reagent) (condensation reaction of a carboxylic acid and an amine in preparation of amides for cleaning)				
RN	112-24-3 HCAPLUS				
CN	1,2-Ethanediamine, N,N'-bis(2-aminoethyl)- (9CI) (CA INDEX NAME)				



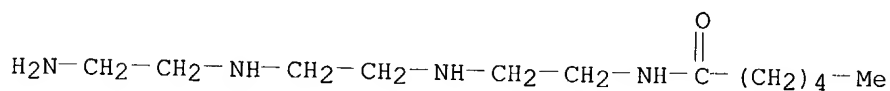
IT 285132-34-5P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(processing and post-processing amide compns. and methods using in removal of electronic contaminants from substrates and equipment)

RN 285132-34-5 HCAPLUS

CN Hexanamide, N-[2-[[2-[(2-aminoethyl)amino]ethyl]amino]ethyl]- (9CI) (CA INDEX NAME)



RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 51 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:493175 HCAPLUS

DN 133:108529

TI Alkaline bath with complexing agent for electroless deposition of copper film or patterns on **activated** substrate **surface**

IN Palmans, Roger; Lantsov, Yuri

PA Interuniversitair Micro-Elektronica Centrum VZW, Belg.

SO Eur. Pat. Appl., 15 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1020543	A1	20000719	EP 1999-870077	19990429
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	EP 1022355	A2	20000726	EP 1999-870243	19991130
	EP 1022355	A3	20001004		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 6398855	B1	20020604	US 1999-459449	19991213
	JP 2000204481	A2	20000725	JP 1999-355082	19991214
	US 2002127348	A1	20020912	US 2002-83690	20020225
	US 6585811	B2	20030701		
PRAI	US 1999-116110P	P	19990115		
	EP 1999-870077	A	19990429		
	EP 1999-870077	A	19990429		
	US 1999-459449	A1	19991213		

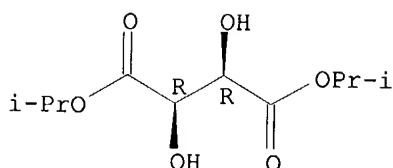
AB The aqueous alkaline bath for electroless deposition of Cu film or pattern (especially

for elec. circuits) contains: (a) Cu(II) salt or ions; (b) reducing agent, especially formaldehyde at <1M; (c) additive for control of the bath pH at 11.0-13.5; and (d) chemical compound for complexing of the Cu²⁺ ions, and having an organic group covalently bound to carboxylate group. The activated substrate optionally includes patterned diffusion-barrier film selected from Ti, TiN, Ta, TaN, W nitride, and/or Co. The complexing compound is typically based on hydrocarbon group (especially CHOH) bound to di-Et tartrate,

diisopropyl tartrate, or di-Me tartrate group. The bath is suitable for electroless deposition of Cu films at $\leq 55^\circ$, especially at $20-40^\circ$ for increased service stability. The resulting Cu film deposited on Pd-**activated surface** (especially on Si-**semiconductor** wafers) is nominally 20-150 nm thick, is suitable for elec.-circuit patterns, and can be increased in thickness by conventional electroplating.

- IC ICM C23C018-40
CC 56-6 (Nonferrous Metals and Alloys)
Section cross-reference(s): 76
ST electroless alk bath copper coating elec circuit; complexing alk bath copper coating elec circuit
IT Integrated circuits
(copper coating on; aqueous alkaline bath with complexing agent for electroless copper film or pattern on **activated substrate surface**)
IT Complexing agents
(copper, for coating bath; aqueous alkaline bath with complexing agent for electroless copper film or pattern on **activated substrate surface**)
IT **Semiconductor** materials
(silicon wafers, copper coating of; aqueous alkaline bath with complexing agent for electroless copper film or pattern on **activated semiconductor wafer surface**)
IT 7440-50-8, Copper, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(coating with; aqueous alkaline bath with complexing agent for electroless copper film or pattern on **activated substrate surface**)
IT 87-91-2, Diethyl tartrate, uses 608-68-4, Dimethyl tartrate, uses 2217-15-4, Diisopropyl tartrate, uses
RL: MOA (Modifier or additive use); USES (Uses)
(complexing agent with, in Cu-coating bath; aqueous alkaline bath with complexing agent for electroless copper film or pattern on **activated substrate surface**)
IT 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 7440-48-4, Cobalt, uses 12033-62-4, Tantalum nitride (TaN) 25583-20-4, Titanium nitride (TiN) 37359-53-8, Tungsten nitride
RL: TEM (Technical or engineered material use); USES (Uses)
(diffusion barrier, for copper; electroless copper film pattern from aqueous alkaline bath on Pd-**activated substrate surface**)
IT 50-00-0, Formaldehyde, uses
RL: MOA (Modifier or additive use); USES (Uses)
(reducing agent, Cu-coating bath with; aqueous alkaline bath with complexing agent for electroless copper film or pattern on **activated substrate surface**)
IT 2217-15-4, Diisopropyl tartrate, uses
RL: MOA (Modifier or additive use); USES (Uses)
(complexing agent with, in Cu-coating bath; aqueous alkaline bath with complexing agent for electroless copper film or pattern on **activated substrate surface**)
RN 2217-15-4 HCAPLUS
CN Butanedioic acid, 2,3-dihydroxy- (2R,3R)-, bis(1-methylethyl) ester (9CI)
(CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 52 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:367080 HCAPLUS
DN 132:355625
TI Improvements in or relating to **semiconductor** device fabrication
using chemical mechanical polishing
IN Hall, Lindsey; Sees, Jennifer; Misra, Ashutosh
PA Texas Instruments Incorporated, USA; Air Liquide America Corporation
SO Eur. Pat. Appl., 10 pp.
CODEN: EPXXDW

DT Patent
LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1004648	A1	20000531	EP 1999-203930	19991124
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 6448182	B1	20020910	US 1999-447172	19991122
	CN 1255521	A	20000607	CN 1999-125836	19991124
	WO 2000032713	A1	20000608	WO 1999-US28087	19991124
	WO 2000032713	C2	20020822		
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6530967	B1	20030311	US 1999-444715	19991124
PRAI	US 1998-109683P	P	19981124		

AB An embodiment of the instant invention is a method of fabricating an elec. device having a structure overlying a **semiconductor** substrate which is **planarized** using CMP, the method comprising the steps of: forming a layer of material over the **semiconductor** substrate; polishing the layer of material by subjecting it to a polishing pad and a slurry which includes peroxygen; and wherein the slurry addnl. includes a stabilizing agent which retards the decomposition of the peroxygen in the slurry. Preferably, the stabilizing agent is comprised of: pyrophosphoric acids, polyphosphonic acids, polyphosphoric acids, EDTA, a salt of the pyrophosphoric acids, a salt of the polyphosphonic acids, a salt of the polyphosphoric acids, a salt of the EDTA and any combination thereof. The stabilizing agent may be comprised of: Na pyrophosphate decahydrate, Na pyrophosphate decahydrate, and/or 8-hydroxyquinoline. The decomposition of the peroxygen in the slurry is catalyzed by transition metals included in the slurry, and may be caused by the pH of the slurry. The layer of material is, preferably, comprised of: W, Cu, Al, a dielec.

- material, and any combination thereof.
- IC ICM C09K003-14
ICS C09G001-02; H01L021-321
- CC 76-3 (Electric Phenomena)
Section cross-reference(s): 66
- ST chem mech polishing peroxygen slurry stabilizing agent;
semiconductor device fabrication polishing
- IT Polishing
(chemical-mech.; improvements in or relating to **semiconductor** device fabrication using chemical mech. polishing with stabilization agents for retarding decomposition of peroxygen)
- IT Electric insulators
Semiconductor device fabrication
Slurries
Stabilizing agents
pH
(improvements in or relating to **semiconductor** device fabrication using chemical mech. polishing with stabilization agents for retarding decomposition of peroxygen)
- IT Polyphosphates
Polyphosphoric acids
RL: TEM (Technical or engineered material use); USES (Uses)
(improvements in or relating to **semiconductor** device fabrication using chemical mech. polishing with stabilization agents for retarding decomposition of peroxygen)
- IT Transition metals, uses
RL: CAT (Catalyst use); USES (Uses)
(peroxygen decomposition; improvements in or relating to **semiconductor** device fabrication using chemical mech. polishing with stabilization agents for retarding decomposition of peroxygen)
- IT Decomposition catalysts
(transition metals for peroxygen; improvements in or relating to **semiconductor** device fabrication using chemical mech. polishing with stabilization agents for retarding decomposition of peroxygen)
- IT 7429-90-5, Aluminum, processes 7440-33-7, Tungsten, processes
7440-50-8, Copper, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(improvements in or relating to **semiconductor** device fabrication using chemical mech. polishing with stabilization agents for retarding decomposition of peroxygen)
- IT 139-33-3 7722-84-1, Hydrogen peroxide, processes 13598-36-2, Phosphonic acid
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(improvements in or relating to **semiconductor** device fabrication using chemical mech. polishing with stabilization agents for retarding decomposition of peroxygen)
- IT 60-00-4, Ethylenediaminetetraacetic acid, uses 148-24-3, 8-Hydroxyquinoline, uses 150-43-6D, Ethylenediaminetetraacetate, salts, uses 7722-88-5 13472-36-1, Sodium pyrophosphate decahydrate 13598-36-2D, Phosphonic acid, polybasic derivs.
RL: TEM (Technical or engineered material use); USES (Uses)
(improvements in or relating to **semiconductor** device fabrication using chemical mech. polishing with stabilization agents for retarding decomposition of peroxygen)
- IT 2466-09-3, Diphosphoric acid 15477-76-6D, Phosphonate, polybasic derivs.
RL: TEM (Technical or engineered material use); USES (Uses)
(salts; improvements in or relating to **semiconductor** device

fabrication using chemical mech. polishing with stabilization agents for
retarding decomposition of peroxygen)

IT 139-33-3

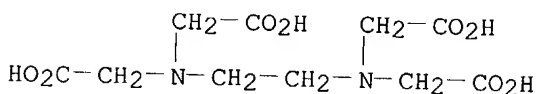
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)

(improvements in or relating to **semiconductor** device

fabrication using chemical mech. polishing with stabilization agents for
retarding decomposition of peroxygen)

RN 139-33-3 HCAPLUS

CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)-, disodium salt (9CI)
(CA INDEX NAME)



●2 Na

IT 60-00-4, Ethylenediaminetetraacetic acid, uses 150-43-6D

, Ethylenediaminetetraacetate, salts, uses

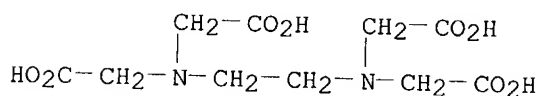
RL: TEM (Technical or engineered material use); USES (Uses)

(improvements in or relating to **semiconductor** device

fabrication using chemical mech. polishing with stabilization agents for
retarding decomposition of peroxygen)

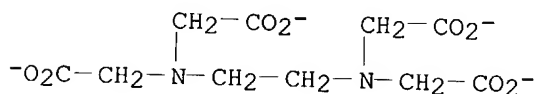
RN 60-00-4 HCAPLUS

CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



RN 150-43-6 HCAPLUS

CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)-, ion(4-) (9CI) (CA
INDEX NAME)



RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 53 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:291176 HCAPLUS

DN 132:302004

TI **Chemical mechanical** polishing slurry system having an
activator solution

IN Mahulikar, Deepak

PA Arch Specialty Chemicals, Inc., USA

SO PCT Int. Appl., 21 pp.

CODEN: PIXXD2

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000024842	A1	20000504	WO 1999-US24864	19991022
	W: JP, KR, SG				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 1124912	A1	20010822	EP 1999-955147	19991022
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002528903	T2	20020903	JP 2000-578398	19991022
	US 6447563	B1	20020910	US 1999-425358	19991022
PRAI	US 1998-105366P	P	19981023		
	WO 1999-US24864	W	19991022		

AB This invention relates to a **CMP** slurry system for use in **semiconductor** device fabrication. The slurry system comprises 2 parts. The 1st part is a generic dispersion that contains only an abrasive and, optionally, a **surfactant** and a stabilizing agent. The generic dispersion can be used for polishing metals as well as interlayer dielects. The 2nd part is a novel activator solution comprising ≥ 2 components selected from: an oxidizer, acids, amines, chelating agents, F-containing compds., corrosion inhibitors, buffering agents, **surfactants**, biol. agents, and their mixts.

IC ICM C09K003-14

CC ICS C09G001-02; B24B001-00

ST 76-3 (Electric Phenomena)

IT **chem mech** polishing slurry activator soln;
semiconductor device fabrication **CMP** slurry

IT Quaternary ammonium compounds, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(alkylbenzyltrimethyl, chlorides; **chemical mech.**
polishing slurry system having activator solution containing)

IT **Surfactants**

(amphoteric; **chemical mech.** polishing slurry system
having activator solution containing)

IT **Surfactants**

(anionic; **chemical mech.** polishing slurry system
having activator solution containing)

IT **Surfactants**

(cationic; **chemical mech.** polishing slurry system
having activator solution containing)

IT Abrasives

Buffers

Chelating agents

Corrosion inhibitors

Oxidizing agents

Stabilizing agents

Surfactants

(**chemical mech.** polishing slurry system having
activator solution containing)

IT Acids, processes

Alkali metal fluorides

Alkaline earth fluorides

Amines, processes

Carboxylic acids, processes

Tannins

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(**chemical mech.** polishing slurry system having activator solution containing)

IT **Semiconductor** device fabrication
Slurries

(**chemical mech.** polishing slurry system having activator solution for **semiconductor** device fabrication)

IT Polishing

(**chemical-mech.**; **chemical mech.** polishing slurry system having activator solution for **semiconductor** device fabrication)

IT Electric insulators

(interlayer; slurry system having activator solution for **chemical-mech.** polishing of)

IT **Surfactants**

(nonionic; **chemical mech.** polishing slurry system having activator solution containing)

IT 50-21-5, Lactic acid, processes 56-34-8, Tetraethylammonium chloride
60-00-4, Ethylenediaminetetraacetic acid, processes 64-18-6,
Formic acid, processes 64-19-7, Acetic acid, processes 67-43-6
, Diethylenetriaminepentaacetic acid 75-57-0, Tetramethylammonium
chloride 75-59-2, Tetramethylammonium hydroxide 77-92-9, Citric acid,
processes 79-09-4, Propanoic acid, processes 87-69-4, Tartaric acid,
processes 88-99-3, Phthalic acid, processes 95-14-7, 1H-Benzotriazole
102-71-6, Triethanolamine, processes 103-76-4, 1-Piperazineethanol
103-83-3D, Benzyldimethylamine, alkyl ammonium hydroxide derivs.
107-92-6, Butanoic acid, processes 109-52-4, Pentanoic acid, processes
111-14-8, Heptanoic acid 111-42-2, Diethanolamine, processes 112-05-0,
Nonanoic acid 124-07-2, Octanoic acid, processes 136-85-6,
6-Tolyltriazole 139-13-9, Nitrilotriacetic acid 141-43-5,
Monoethanolamine, processes 142-62-1, Hexanoic acid, processes
149-91-7, Gallic acid, processes 150-39-0, N-
Hydroxyethylethylenediaminetriacetic acid 373-68-2, Tetramethylammonium
fluoride 409-21-2, Silicon carbide (SiC), processes 526-95-4, Gluconic
acid 627-74-7 929-06-6, Diethyleneglycolamine 1306-38-3, Ceria,
processes 1310-58-3, Potassium hydroxide, processes 1314-23-4,
Zirconium oxide, processes 1332-29-2, Tin oxide 1332-37-2, Iron oxide,
processes 1336-21-6, Ammonium hydroxide ((NH₄)(OH)) 1341-49-7,
Ammonium bifluoride 1344-28-1, Alumina, processes 3811-73-2, Sodium
pyrithione 4499-86-9, Tetrapropylammonium hydroxide 5810-42-4,
Tetrapropylammonium chloride 6915-15-7, Malic acid 7647-01-0,
Hydrochloric acid, processes 7664-38-2, Phosphoric acid, processes
7664-39-3, Hydrofluoric acid, processes 7664-93-9, Sulfuric acid,
processes 7681-52-9, Sodium chlorite 7697-37-2, Nitric acid,
processes 7758-19-2, Sodium hypochlorite 7803-49-8, Hydroxylamine,
processes 12033-89-5, Silicon nitride, processes 12125-01-8, Ammonium
fluoride 13463-67-7, Titanium dioxide, processes 35914-36-4,
Pyrogallol carboxylic acid 57178-78-6 68444-11-1 123155-80-6
130397-22-7, Perfluoric acid 152275-68-8, 1-
(2,3-Dicarboxypropyl)benzotriazole

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

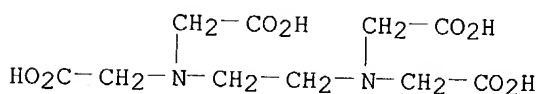
(**chemical mech.** polishing slurry system having activator solution containing)

IT 7631-86-9, Silica, processes

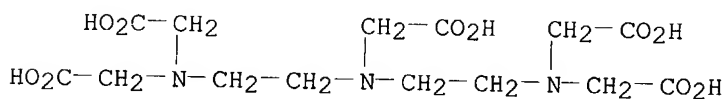
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(colloidal; **chemical mech.** polishing slurry system

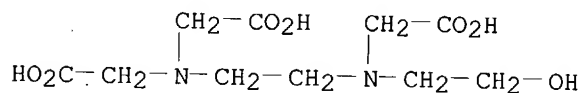
having activator solution containing)
 IT 7429-90-5, Aluminum, processes 7440-25-7, Tantalum, processes
 7440-32-6, Titanium, processes 7440-33-7, Tungsten, processes
 7440-50-8, Copper, processes
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (slurry system having activator solution for **chemical-mech** polishing of)
 IT 60-00-4, Ethylenediaminetetraacetic acid, processes
 67-43-6, Diethylenetriaminepentaacetic acid 150-39-0, N-Hydroxyethylethylenediaminetriacetic acid
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (**chemical mech.** polishing slurry system having activator solution containing)
 RN 60-00-4 HCAPLUS
 CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)]



RN 67-43-6 HCAPLUS
 CN Glycine, N,N-bis[2-[bis(carboxymethyl)amino]ethyl]- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 150-39-0 HCAPLUS
 CN Glycine, N-[2-[bis(carboxymethyl)amino]ethyl]-N-(2-hydroxyethyl)- (9CI) (CA INDEX NAME)



RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 54 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2000:175617 HCAPLUS
 DN 132:215712
 TI Substrate-cleaning method and solutions
 IN Aoki, Hidemitsu
 PA NEC Corporation, Japan
 SO Eur. Pat. Appl., 22 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

PI	EP 986096	A2	20000315	EP 1999-117557	19990906
	EP 986096	A3	20000517		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 6423148	B1	20020723	US 1999-388485	19990902
	CN 1247107	A	20000315	CN 1999-119023	19990907
	US 2001029104	A1	20011011	US 2001-835412	20010417
	US 6444583	B2	20020903		
PRAI	JP 1998-252661	A	19980907		
	US 1999-388485	A3	19990902		

AB In cleaning a substrate which has, on its surface, a metal and a **semiconductive** material and which has been subjected to **chemical-mech.** polishing, the substrate is first cleaned with a first cleaning solution containing NH₄OH and then with a second cleaning solution containing a compound capable of forming a complex with the oxide of the

metal and an anionic or cationic **surfactant**.

IC ICM H01L021-306

CC 76-3 (Electric Phenomena)

ST **semiconductor** device substrate cleaning soln ammonium hydroxide; complexing agent **surfactant** cleaning soln metal contg substrate

IT **Semiconductor** devices
(cleaning solns. containing ammonium hydroxide, complexing agents, and **surfactants** for metal-containing substrates of)

IT Interconnections (electric)
(copper; cleaning solns. containing ammonium hydroxide, complexing agents, and **surfactants** for substrates containing)

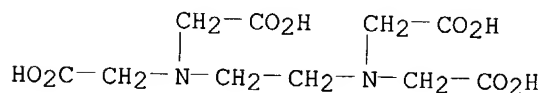
IT 7440-50-8, Copper, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(interconnections; cleaning solns. containing ammonium hydroxide, complexing agents, and **surfactants** for substrates containing)

IT 60-00-4, EDTA, uses 67-43-6,
Diethylenetriaminepentaacetic acid 77-92-9, Citric acid, uses 87-69-4, Tartaric acid, uses 110-15-6, Succinic acid, uses 110-16-7, Maleic acid, uses 139-13-9, Nitrilotriacetic acid 141-82-2, Malonic acid, uses 144-62-7, Oxalic acid, uses 150-39-0,
N-(2-Hydroxyethyl)ethylenediamine-N,N,N'-triacetic acid- 1336-21-6, Ammonium hydroxide 2083-68-3 6915-15-7, Malic acid 7577-59-5 9081-17-8 13291-61-7, trans-1,2-Cyclohexanediaminetetraacetic acid 26183-44-8 68207-00-1
RL: NUU (Other use, unclassified); USES (Uses)
(**semiconductor** device metal-containing substrate cleaning solns. containing)

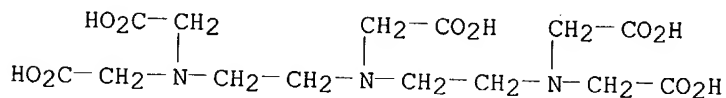
IT 60-00-4, EDTA, uses 67-43-6,
Diethylenetriaminepentaacetic acid 150-39-0,
N-(2-Hydroxyethyl)ethylenediamine-N,N,N'-triacetic acid-
RL: NUU (Other use, unclassified); USES (Uses)
(**semiconductor** device metal-containing substrate cleaning solns. containing)

RN 60-00-4 HCAPLUS

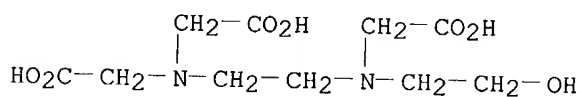
CN Glycine, N,N'-1,2-ethanediyldis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)]



RN 67-43-6 HCAPLUS
 CN Glycine, N,N-bis[2-[bis(carboxymethyl)amino]ethyl]- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 150-39-0 HCAPLUS
 CN Glycine, N-[2-[bis(carboxymethyl)amino]ethyl]-N-(2-hydroxyethyl)- (9CI) (CA INDEX NAME)



L114 ANSWER 55 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2000:140581 HCAPLUS
 DN 132:188495
 TI Electroless gold coating method for forming of inductor wiring structures on **semiconductor** devices suitable for RF applications
 IN Lee, Chwan-Ying; Huang, Tzuen-Hsi
 PA Industrial Technology Research Institute, Taiwan
 SO U.S., 20 pp.
 CODEN: USXXAM

DT Patent
 LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6030877	A	20000229	US 1997-944498	19971006
PRAI	US 1997-944498		19971006		

AB The elec. wiring structure with inductor units for integrated circuits with **semiconductor** substrates is fabricated by: (a) forming the 1st insulation (especially SiO₂ film) layer over the substrate; (b) forming an electroless Ni-P film barrier interlayer, and applying the Au conductor layer by electroless deposition on the Ni interlayer; (c) forming a **planarization** layer over the Au film; (d) forming a core layer of Fe-Co alloy by electroless deposition over the **planarization** layer; and (e) repeating the above stages to form the 2nd conductor layer over the alloy-core layer. The Fe-Co alloy layer is deposited at 87-93° from the aqueous electroless bath containing KAu(CN)₂ 4-6, KCN 7-9, NaOH 18-22, Na₂EDTA 13017, and NaBH₄ 23-27 g/L. The coating process is modified with photoresist interlayers and activation stages to apply conductor patterns with the associated etching stages for the elec. circuits. The resulting electroless Au inductor can withstand high c.d. without damage from the electromigration effects, and is resistant to corrosion.

IC ICM H01L021-44

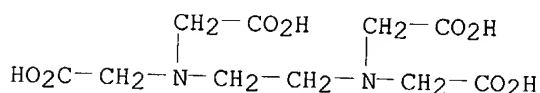
NCL 438381000

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 56, 73

ST **semiconductor** integrated circuit gold film inductor pattern;
 electroless gold film elec integrated circuit; iron cobalt alloy film elec

integrated circuit
 IT **Semiconductor** materials
 (substrates, elec. circuits on; electroless gold film for inductor wiring on **semiconductor** devices for RF application)
 IT Integrated circuits
 (with inductors; electroless gold film for inductor wiring on **semiconductor** devices for RF application)
 IT 139-33-3, EDTA disodium salt 151-50-8, Potassium cyanide (KCN) 13967-50-5, Potassium aurocyanide [KAu(CN)2] 16940-66-2, Sodium borohydride
 RL: MOA (Modifier or additive use); USES (Uses)
 (electroless bath with; electroless Fe-Co alloy film for wiring on **semiconductor** devices for RF applications)
 IT 7440-02-0, Nickel, uses 7440-57-5, Gold, uses 12638-90-3
 RL: DEV (Device component use); USES (Uses)
 (film, elec. circuits with; electroless gold film for inductor wiring on **semiconductor** devices for RF application)
 IT 11146-55-7
 RL: TEM (Technical or engineered material use); USES (Uses)
 (film, elec. circuits with; electroless gold film for inductor wiring on **semiconductor** devices for RF application)
 IT 7440-21-3, Silicon, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**semiconductors**, elec. circuits with; electroless gold film for inductor wiring on **semiconductor** devices for RF application)
 IT 139-33-3, EDTA disodium salt
 RL: MOA (Modifier or additive use); USES (Uses)
 (electroless bath with; electroless Fe-Co alloy film for wiring on **semiconductor** devices for RF applications)
 RN 139-33-3 HCAPLUS
 CN Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)-, disodium salt (9CI)
 (CA INDEX NAME)

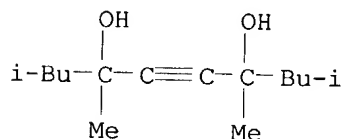


●2 Na

L114 ANSWER 56 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2000:136435 HCAPLUS
 DN 132:186843
 TI Antifoaming agent used in electroplating process for **semiconductor** devices
 IN Muroyama, Masakazu
 PA Sony Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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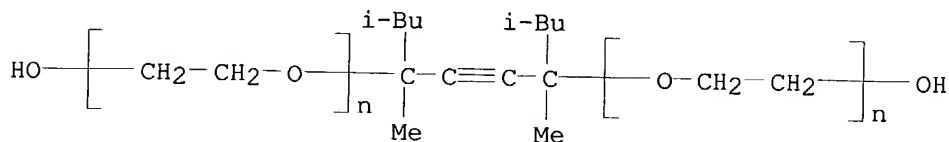
PI JP 2000064083 A2 20000229 JP 1998-237310 19980824
 PRAI JP 1998-237310 19980824
 AB The invention relates to an antifoaming agent added in an electrolyte solution for reducing the bubbles generated during electroplating processes, thus 0.01%-5% nonionic **surfactant**, such as acetylene diol, ethyleneglycol, or polyethyleneglycol based **surfactant**, is added to a copper sulfate solution for the copper electroplating process, e.g. Damascene process used in **semiconductor** industries.
 IC ICM C25D003-02
 ICS C25D003-38; C25F003-04; H01L021-288
 CC 72-8 (Electrochemistry)
 Section cross-reference(s): 76
 ST antifoaming agent electroplating nonionic **surfactant**
semiconductor device
 IT Electrodeposition
Semiconductor devices
 (antifoaming agent used in electroplating process for **semiconductor** devices)
 IT **Surfactants**
 (nonionic; antifoaming agent used in electroplating process for **semiconductor** devices)
 IT 126-86-3, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol
 RL: TEM (Technical or engineered material use); USES (Uses)
 (antifoaming agent used in electroplating process for **semiconductor** devices)
 IT 126-86-3, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol
 RL: TEM (Technical or engineered material use); USES (Uses)
 (antifoaming agent used in electroplating process for **semiconductor** devices)
 RN 126-86-3 HCAPLUS
 CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L114 ANSWER 57 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1999:813998 HCAPLUS
 DN 132:57138
 TI Solution and method for processing of photoresist pattern after ashing
 IN Tanabe, Masato; Wakiya, Kazumasa; Kobayashi, Seiichi; Komano, Hiroshi; Nakayama, Toshimasa
 PA Tokyo Ohka Kogyo Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11352703	A2	19991224	JP 1998-157791	19980605
	US 6261745	B1	20010717	US 1999-323988	19990602
PRAI	JP 1998-157791	A	19980605		

- OS MARPAT 132:57138
- AB The solution contains (a) HF salt with a metal ion-free base, (b) a water-soluble organic solvent, (c) H₂O, and (d) acetylene alc.-alkylene oxide adduct. A patterned substrate for **semiconductor** elements, liquid crystal panels, etc., is etched, ashed, and **treated** with the solution to show good removal of metal deposition and to give anticorrosive effect.
- IC ICM G03F007-42
ICS C11D001-72; C11D003-04; C11D003-43; C11D007-10; C11D007-22; C11D007-50; H01L021-3065; H01L021-027
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
- ST fluoride soln photoresist pattern etching ashing; acetylene alc alkylene oxide adduct soln photoresist; **semiconductor** substrate metal deposition removal soln; liq crystal panel metal deposition removal
- IT Alcohols, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(alkynyl, alkoxylated; solution containing fluorides and acetylene alcs. for **treatment** of photoresist pattern after ashing)
- IT Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(alkynyl-terminated; solution containing fluorides and acetylene alcs. for **treatment** of photoresist pattern after ashing)
- IT Liquid crystal displays
Photoresists
Semiconductor devices
(solution containing fluorides and acetylene alcs. for **treatment** of photoresist pattern after ashing)
- IT **9014-85-1**, Acetylenol EL 12125-01-8, Ammonium fluoride
RL: TEM (Technical or engineered material use); USES (Uses)
(solution containing fluorides and acetylene alcs. for **treatment** of photoresist pattern after ashing)
- IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, N,N-Dimethylformamide, uses 80-73-9, 1,3-Dimethyl-2-imidazolidinone 107-21-1, Ethylene glycol, uses 112-34-5, Diethylene glycol monobutyl ether 127-19-5, N,N-Dimethylacetamide 872-50-4, N-Methyl-2-pyrrolidone, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; solution containing fluorides and acetylene alcs. for **treatment** of photoresist pattern after ashing)
- IT **9014-85-1**, Acetylenol EL
RL: TEM (Technical or engineered material use); USES (Uses)
(solution containing fluorides and acetylene alcs. for **treatment** of photoresist pattern after ashing)
- RN 9014-85-1 HCAPLUS
- CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)]

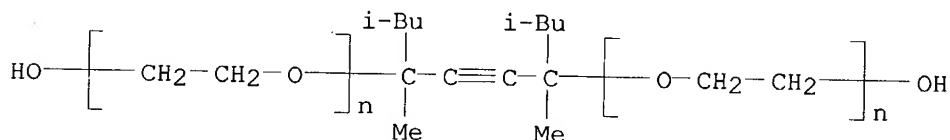


AN 1999:753441 HCAPLUS
 DN 131:359105
 TI Silicate-containing alkaline compositions for **cleaning**
 microelectronic substrates
 IN Skee, David C.
 PA Mallinckrodt Inc., USA
 SO PCT Int. Appl., 78 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9960448	A1	19991125	WO 1999-US10875	19990517
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	CA 2330747	AA	19991125	CA 1999-2330747	19990517
	AU 9941895	A1	19991206	AU 1999-41895	19990517
	EP 1105778	A1	20010613	EP 1999-925649	19990517
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
	JP 2003526111	T2	20030902	JP 2000-550003	19990517
	US 6585825	B1	20030701	US 2000-688559	20001016
PRAI	US 1998-85681P	P	19980518		
	US 1999-115084P	P	19990107		
	US 1998-85861P	P	19980518		
	WO 1999-US10875	W	19990517		
AB	The invention provides aqueous alkaline compns. useful in the microelectronics industry for stripping or cleaning semiconductor wafer substrates by removing photoresist residues and other unwanted contaminants. The compns. typically contain (a) ≥ 1 metal-ion-free bases in sufficient amts. to produce a pH of ≥ 11 ; (b) .apprx.0.01-5 weight% (expressed as % SiO ₂) of a H ₂ O-soluble metal-ion-free silicate; (c) optionally, .apprx.0.01-10 weight% of ≥ 1 chelating agents; (d) optionally, .apprx.0.01-80 weight% of ≥ 1 H ₂ O-soluble organic co-solvents; (e) optionally, .apprx.1-50 weight% Ti residue removal enhancer; and (f) optionally, .apprx.0.01-1 weight% H ₂ O-soluble surfactant .				
IC	ICM G03F007-42				
CC	76-3 (Electric Phenomena)				
ST	silicate contg alk compn cleaning microelectronic substrate				
IT	Silsesquioxanes				
	RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)				
	(hydrogen; silicate-containing alkaline compns. for cleaning of silicon wafers coated with)				
IT	Quaternary ammonium compounds, processes				
	RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)				
	(hydroxides; silicate-containing alkaline compns. for cleaning of silicon wafers coated with)				
IT	Amines, processes				
	RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical				

- process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (organic; silicate-containing alkaline compns. for **cleaning** of silicon wafers coated with)
- IT **Cleaning**
 Microelectronic devices
 (silicate-containing alkaline compns. for **cleaning** microelectronic substrates)
- IT Silicates, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (silicate-containing alkaline compns. for **cleaning** microelectronic substrates)
- IT Chelating agents
Surfactants
 (silicate-containing alkaline compns. for **cleaning** microelectronic substrates containing)
- IT **Semiconductor** device fabrication
 (silicate-containing alkaline compns. for **cleaning** microelectronic substrates in)
- IT Alcohols, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (silicate-containing alkaline compns. for **cleaning** of silicon wafers coated with)
- IT **Semiconductor** materials
 (silicate-containing alkaline compns. for **cleaning semiconductor** wafers)
- IT Photoresists
 (silicate-containing alkaline compns. for removing photoresist residues from microelectronic substrates)
- IT 78-21-7, Barquat CME 35
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (Barquat CME 35; silicate-containing alkaline compns. for **cleaning** microelectronic substrates containing)
- IT 25583-20-4, Titanium nitride (TiN)
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process); USES (Uses)
 (removal residues of; silicate-containing alkaline compns. for **cleaning** microelectronic substrates for)
- IT 56-81-5, Glycerol, processes 60-00-4, EDTA, processes 62-49-7, Choline 67-43-6, Diethylenetriaminepentaacetic acid 67-63-0, Isopropanol, processes 67-68-5, DMSO, processes 75-59-2, Tetramethylammonium hydroxide 111-46-6, Diethylene glycol, processes 112-35-6, Triethylene glycol monomethyl ether 869-52-3, Triethylenetetraminehexaacetic acid 872-50-4, processes 1429-50-1 2052-49-5, Tetrabutylammonium hydroxide 3148-72-9, 1,3-Diamino-2-hydroxypropane-N,N,N',N'-tetraacetic acid 7722-84-1, Hydrogen peroxide, processes 7803-49-8, Hydroxylamine, processes **9014-85-1, Surfynol** 465 13291-61-7, trans-(1,2-Cyclohexylenedinitrilo)tetraacetic acid 29081-56-9, Fluorad FC 93 29117-08-6, Fluorad FC 170C 33667-48-0, Methyltriethanolammonium hydroxide 53116-81-7, Tetramethylammonium silicate 109334-81-8, Methyltriethylammonium hydroxide 163662-60-0, Rewoteric AM KSF 40
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES

(Uses)
 (silicate-containing alkaline compns. for **cleaning** microelectronic substrates containing)
 IT 7440-21-3, Silicon, processes
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (silicate-containing alkaline compns. for **cleaning** of)
 IT 10028-15-6, Ozone, processes 16984-48-8, Fluoride, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (silicate-containing alkaline compns. for **cleaning** of silicon wafers coated with)
 IT 65442-43-5
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (silicate-containing alkaline compns. for removing residues from)
 IT 9014-85-1, **Surfynol** 465
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (silicate-containing alkaline compns. for **cleaning** microelectronic substrates containing)
 RN 9014-85-1 HCAPLUS
 CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 59 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1999:572089 HCAPLUS
 DN 131:219611
 TI Method for preparation of super fine particles of transition metals
 IN Sato, Shizuko
 PA Japan
 SO Jpn. Kokai Tokkyo Koho, 12 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11241107	A2	19990907	JP 1998-319904	19981023
PRAI	JP 1997-308089		19971023		
AB	Super-fine metal particles are prepared by reacting (complexing followed by reducing or oxidizing) at least one or ≥ 2 transition metal ions with a nonionic surfactant possessing ethylene or acetylene group, e.g. acetylene glycol-series nonionic surfactant , in a solution (water or organic compound solvent) or in a matrix or on the surface of a				

matrix. In a very simple procedure, this process provides pure and powdery super-fine metal or metal composite particles with uniform sizes or inorg. or organic materials with these super-fine particles being dispersed inside or on the surface of the material. Owing to a very simple system, it can change the formation conditions, i.e. in solution or established or unestablished polymer or inorg. matrix or at temperature range 10-100°, can manufacture super-fine metal composite particles in simultaneous copresence of ≥ 2 transition metal ions, can mixture a plural number of super-fine metal particles to obtain mixed super-fine metal particles, or can manufacture multilayered super-fine metal particles via stepwise copresence of different transition metal ions. They find a wide range of applications in industry and technol. or a variety of studies including electronic or chemical industry, ceramics, drugs, and food, in particular paste, **semiconductors**, and chemical sensors. Thus, 2 mL AgClO₄ solution (0.1-20 mmol/kg) and a 2 mL toluene solution of α, α' -[2,4,7,9-tetramethyl-5-undecen-4,7-diyl]bis[ω -hydroxy-polyoxyethylene] (**Surfynol 465**, acetylene glycol-series nonionic **surfactant**, Airproduct & Chems.) were mixed and left to stand for 1 day to give a yellow brown solution containing silver colloid (diameter .apprx.10 nm). The colloid solution was left to stand at room temperature under reduced pressure for concentration to give a brown precipitate of silver particles which were repeatedly **washed** with purified toluene and dried after each **washing** to give super-fine particles of silver as a powder.

IC ICM B22F009-00
ICS B22F009-24
CC 66-5 (Surface Chemistry and Colloids)
Section cross-reference(s): 15, 67, 76
ST super fine particle transition metal prepn; acetylene glycol nonionic **surfactant** 3412 2134 4123; transition metal ion redn super fine particle 4123567
IT Polyamides, uses
Polyimides, uses
RL: NUU (Other use, unclassified); USES (Uses)
(aromatic, matrix; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
IT Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fluorine- and sulfo-containing, ionomers, matrix; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
IT Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fluorine-containing, sulfo-containing, ionomers, matrix; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
IT Scanning probe microscopes
(immunol., protein A-bovine serum albumin-super-fine gold particle complex; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
IT Transition metals, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(ions; preparation of super fine particles of transition metals by reaction

- of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT Ceramics
 - Semiconductor materials**
 - (matrix; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT Clays, uses
 - Glass, uses
 - Polyamides, uses
 - Polycarbonates, uses
 - Polyesters, uses
 - Polyimides, uses
 - Polymers, uses
 - Zeolites (synthetic), uses
 - RL: NUU (Other use, unclassified); USES (Uses)
 - (matrix; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT Particles
 - RL: IMF (Industrial manufacture); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 - (metal; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT **Surfactants**
 - (nonionic; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT Reduction catalysts
 - (photoredn., super-fine gold particles supported on titanium oxide; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT Fluoropolymers, uses
 - Fluoropolymers, uses
 - RL: NUU (Other use, unclassified); USES (Uses)
 - (polyoxyalkylene-, sulfo-containing, ionomers, matrix; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT Ionomers
 - RL: NUU (Other use, unclassified); USES (Uses)
 - (polyoxyalkylenes, fluorine- and sulfo-containing, matrix; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT Electric conductors
 - Hydrogels
 - Pastes
 - Reduction
 - Reduction, photochemical
 - Sensors
 - (preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT Transition metals, properties
 - RL: IMF (Industrial manufacture); PRP (Properties); SPN (Synthetic

- preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT Albumins, properties
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (serum, bovine, complex with super-fine gold particles and protein A, electron microscope probe; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT Raman spectroscopy
 (super-fine gold particles dispersed in pyridine; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT Colloids
 (transition metal; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT 7440-57-5DP, Gold, super-fine particles supported on titanium oxide, preparation 13463-67-7DP, Titanium oxide, super-fine gold particle supported on
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (catalyst for photochem. reduction of carbon dioxide; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT 64-18-6P, Formic acid, preparation 64-19-7P, Acetic acid, preparation
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (catalytic photochem. reduction of carbon dioxide to; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT 124-38-9, Carbon dioxide, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (catalytic photochem. reduction; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT 7440-57-5DP, Gold, super-fine particles, complex with bovine serum albumin and protein A, properties
 RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
 (immunol. electron microscope probe; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT 74-79-3D, Arginine, salts with natural polymers 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-53-6, Polystyrene 9004-34-6D, Cellulose, derivs., uses 9004-61-9D, Hyaluronic acid, salts with natural polymers
 RL: NUU (Other use, unclassified); USES (Uses)
 (matrix; preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic **surfactants**)
- IT 7440-57-5DP, Gold, super-fine particles (composite colloid) of silver and, properties
 RL: IMF (Industrial manufacture); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (preparation of super fine particles of transition metals by reaction of

transition metal ions with acetylene glycol-series nonionic
surfactants)

- IT 7440-22-4DP, Silver, super-fine particles (composite colloid) of gold and, properties 7440-22-4P, Silver, properties 7440-57-5DP, Gold, colloid dispersed in polyvinyl alc., properties
RL: IMF (Industrial manufacture); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic
surfactants)

- IT 7439-88-5P, Iridium, preparation 7439-89-6P, Iron, preparation
7439-91-0P, Lanthanum, preparation 7439-96-5P, Manganese, preparation
7439-98-7P, Molybdenum, preparation 7440-02-0P, Nickel, preparation
7440-03-1P, Niobium, preparation 7440-04-2P, Osmium, preparation
7440-05-3P, Palladium, preparation 7440-06-4P, Platinum, preparation
7440-15-5P, Rhenium, preparation 7440-16-6P, Rhodium, preparation
7440-18-8P, Ruthenium, preparation 7440-20-2P, Scandium, preparation
7440-25-7P, Tantalum, preparation 7440-26-8P, Technetium, preparation
7440-32-6P, Titanium, preparation 7440-33-7P, Tungsten, preparation
7440-34-8P, Actinium, preparation 7440-47-3P, Chromium, preparation
7440-48-4P, Cobalt, preparation 7440-50-8P, Copper, preparation
7440-57-5DP, Gold, super-fine particles dispersed in silica glass, preparation 7440-57-5DP, Gold, super-fine particles dispersed in synthetic quartz glass, preparation 7440-58-6P, Hafnium, preparation
7440-62-2P, Vanadium, preparation 7440-65-5P, Yttrium, preparation
7440-67-7P, Zirconium, preparation

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic
surfactants)

- IT 9002-89-5, Polyvinyl alcohol

RL: NUU (Other use, unclassified); USES (Uses)

(preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic
surfactants)

- IT 2487-90-3, Trimethoxysilane 7761-88-8, Silver nitrate, reactions
7783-93-9, Silver perchlorate **9014-85-1, Surfynol 465**
10026-04-7, Tetrachlorosilicon 16903-35-8, Chloroauric acid

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic
surfactants)

- IT 9002-89-5DP, Polyvinyl alcohol, gold colloid dispersed in 9002-89-5DP, Polyvinyl alcohol, hydrogel, gold colloid dispersed in 9004-64-2DP, Hydroxypropyl cellulose, gold colloid dispersed in

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic
surfactants)

- IT **9014-85-1, Surfynol 465**

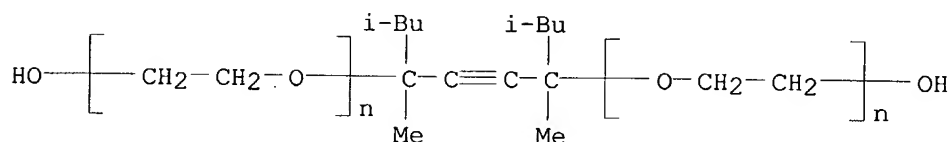
RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of super fine particles of transition metals by reaction of transition metal ions with acetylene glycol-series nonionic
surfactants)

- RN 9014-85-1 HCAPLUS

EN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(2-

methylpropyl)-2-butyne-1,4-diyl]bis[ω-hydroxy- (9CI) (CA INDEX NAME)



L114 ANSWER 60 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1999:223003 HCAPLUS

DN 130:254115

TI Aqueous **rinsing** composition to remove residues from a **semiconductor** substrate

IN Olin Microelectronic Chemicals, Inc; Honda, Kenji

PA USA

SO PCT Int. Appl., 31 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9915609	A1	19990401	WO 1998-US19677	19980922
	W:			AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM	
	RW:			GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG	
	US 5977041	A	19991102	US 1997-936010	19970923
	AU 9894973	A1	19990412	AU 1998-94973	19980922
	EP 1017770	A1	20000712	EP 1998-948390	19980922
	R:			BE, DE, FR, GB, IT, NL, IE	
	JP 2001517728	T2	20011009	JP 2000-512904	19980922
	JP 3441715	B2	20030902		
PRAI	US 1997-936010	A	19970923		
	WO 1998-US19677	W	19980922		
OS	MARPAT 130:254115				
AB	An aqueous post-strip rinsing composition comprises (1) H ₂ O, (2) ≥1 water-soluble organic acid, and (3) ≥1 water-soluble surfactant , the rinse solution having a pH .apprx.2.0-5.0. A rinse solution (pH 2.9) contained water 99.8, lactic acid 0.1, and Surfynol 420 0.1 g was used after post stripping of patterned Si wafers.				
IC	ICM C11D001-68 ICS C11D003-20				
CC	46-6 (Surface Active Agents and Detergents) Section cross-reference(s): 76				
ST	aq acidic rinse soln semiconductor ; lactic acid surfactant aq rinse soln; Surfynol acid aq rinse soln				
IT	Semiconductor materials (aqueous rinsing composition of organic acid and oxyethylene				

surfactant to remove residues from a **semiconductor** substrate)

IT Carboxylic acids, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(aqueous **rinsing** composition of organic acid and oxyethylene **surfactant** to remove residues from a **semiconductor** substrate)

IT **Cleaning** solvents

(**rinsing** and; aqueous **rinsing** composition of organic acid and oxyethylene **surfactant** to remove residues from a **semiconductor** substrate)

IT 50-21-5, Lactic acid, uses 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses 69-72-7, Salicylic acid, uses 77-92-9, Citric acid, uses 79-09-4, Propionic acid, uses 79-14-1, Glycolic acid, uses 87-69-4, Tartaric acid, uses 88-99-3, Phthalic acid, uses 109-52-4, Valeric acid, uses 110-15-6, Succinic acid, uses 110-16-7, Maleic acid, uses 110-17-8, Fumaric acid, uses 110-94-1, Glutaric acid 141-82-2, Malonic acid, uses 144-62-7, Oxalic acid, uses 503-74-2, Isovaleric acid 526-95-4, Gluconic acid 569-51-7, 1,2,3-Benzenetricarboxylic acid 9014-85-1, Surfynol 420

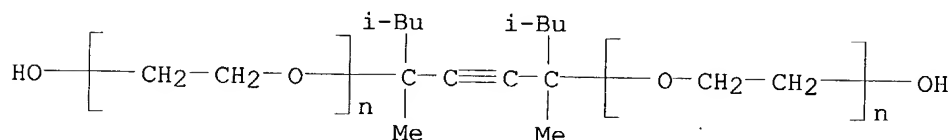
RL: TEM (Technical or engineered material use); USES (Uses)
(aqueous **rinsing** composition of organic acid and oxyethylene **surfactant** to remove residues from a **semiconductor** substrate)

IT 9014-85-1, Surfynol 420

RL: TEM (Technical or engineered material use); USES (Uses)
(aqueous **rinsing** composition of organic acid and oxyethylene **surfactant** to remove residues from a **semiconductor** substrate)

RN 9014-85-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L114 ANSWER 61 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1998:335704 HCAPLUS

DN 129:75163

TI Surface-treatment of silver-plated film on copper-based alloy lead frame

IN Ozaki, Toshinori; Akino, Hisanori; Tomobe, Masakatsu; Yoshida, Kazuaki; Koizumi, Ryoichi

PA Hitachi Cable, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.

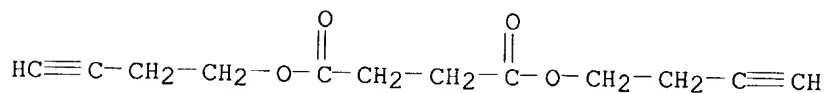
KIND

DATE

APPLICATION NO.

DATE

 PI JP 10140389 A2 19980526 JP 1996-295093 19961107
 PRAI JP 1996-295093 19961107
 AB The method is carried out by masking a lead frame with a solid material only to expose a Ag-plated film, **washing** the Ag film with a chemical **washing** fluid, preferably successively using 5-250 g/L aqueous KCN solution containing 0.1-2.0% plating modifier and the modifier-free solution, and **washing** the film with water. The thickness and minuteness of the Ag plated film is well controlled without dissoln. of Cu lead frame parts.
 IC ICM C25D005-48
 ICS C25D007-12
 CC 76-3 (Electric Phenomena)
 ST silver plating film surface **treatment**; **semiconductor** lead frame silver plating **treatment**; copper lead frame silver plating **treatment**; potassium cyanate **washing** fluid silver plating
 IT Lanolin
 RL: NUU (Other use, unclassified); USES (Uses)
 (plating modifier; surface-**treatment** of Ag-plated film on copper-based alloy lead frame in **semiconductor** device)
 IT Lead frames
Semiconductor device fabrication
 (surface-**treatment** of Ag-plated film on copper-based alloy lead frame in **semiconductor** device)
 IT 50-21-5, Lactic acid, uses 50-99-7, Glucose, uses 51-17-2, Benzimidazole 52-90-4, Cysteine, uses 62-56-6, Thiourea, uses 63-42-3, Lactose 64-19-7D, Acetic acid, halo-substituted, uses 65-85-0, Benzoic acid, uses 69-72-7, Salicylic acid, uses 79-14-1, Glycolic acid, uses 87-69-4, uses 95-14-7, 1H-Benzotriazole 95-16-9, Benzothiazole 102-71-6, uses 107-15-3, 1,2-Ethanediamine, uses 107-21-1, 1,2-Ethandiol, uses 110-86-1, Pyridine, uses 123-31-9, 1,4-Benzenediol, uses 621-82-9, Cinnamic acid, uses 3458-28-4, Mannose 6915-15-7, Malic acid 7631-86-9, Silica, uses 13598-36-2, Phosphonic acid 25265-76-3, Phenylenediamine 29467-96-7, Mercaptopyridine 29734-16-5, Aminobenzaldehyde 51156-90-2, Butanetetracarboxylic acid 156761-17-0 161328-20-7
 RL: NUU (Other use, unclassified); USES (Uses)
 (plating modifier; surface-**treatment** of Ag-plated film on copper-based alloy lead frame in **semiconductor** device)
 IT 7440-22-4, Silver, processes
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (surface-**treatment** of Ag-plated film on copper-based alloy lead frame in **semiconductor** device)
 IT 590-28-3, Potassium cyanate
 RL: NUU (Other use, unclassified); USES (Uses)
 (surface-**treatment** of Ag-plated film on copper-based alloy lead frame in **semiconductor** device)
 IT 156761-17-0
 RL: NUU (Other use, unclassified); USES (Uses)
 (plating modifier; surface-**treatment** of Ag-plated film on copper-based alloy lead frame in **semiconductor** device)
 RN 156761-17-0 HCAPLUS
 CN Butanedioic acid, di-3-butynyl ester (9CI) (CA INDEX NAME)



L114 ANSWER 62 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1996:618802 HCAPLUS

DN 125:263285

TI Chemical solutions and method for removing metal-compound contaminants from wafers after chemical-mechanical polishing (CMP)

IN Schonauer, Diana M.; Avanzino, Steven C.

PA Advanced Micro Devices, Inc., USA

SO PCT Int. Appl., 19 pp.

CODEN: PIXXD2

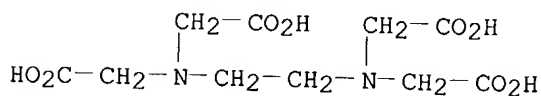
DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9626538	A1	19960829	WO 1996-US156	19960111
	W: JP, KR				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 5662769	A	19970902	US 1995-391812	19950221
	EP 811244	A1	19971210	EP 1996-902102	19960111
	R: DE, FR, GB, NL				
PRAI	US 1995-391812		19950221		
	WO 1996-US156		19960111		
AB	A process and solution for cleaning Fe contaminants bound to a metalized semiconductor surface after CMP planarization are described. The solution comprises a pH-buffered solution including HF and a citrate or EDTA ligand.				
IC	ICM H01L021-306				
	ICS H01L021-321				
CC	76-3 (Electric Phenomena)				
ST	metal compd contaminant removal chem soln; wafer cleaning chem mech polishing				
IT	Semiconductor materials				
	(cleaning of semiconductor wafers after chemical-mech. polishing)				
IT	Cleaning				
	(of semiconductor wafers after chemical-mech. polishing)				
IT	Polishing				
	(chemical-mech., cleaning of semiconductor wafers after)				
IT	7440-32-6, Titanium, processes 7440-33-7, Tungsten, processes				
	RL: PEP (Physical, engineering or chemical process); PROC (Process)				
	(cleaning after chemical-mech. polishing of semiconductor wafers having layers of)				
IT	60-00-4, EDTA, processes 77-92-9D, Citric acid, salts				
	3012-65-5, Diammonium hydrogen citrate 3458-72-8, Triammonium citrate				
	7664-39-3, Hydrogen fluoride, processes				
	RL: PEP (Physical, engineering or chemical process); PROC (Process)				
	(cleaning of semiconductor wafers after chemical-mech. polishing using solution containing)				
IT	7439-89-6, Iron, processes				
	RL: REM (Removal or disposal); PROC (Process)				
	(removal of iron-containing contaminants after chemical-mech. polishing of semiconductor wafers)				

IT 60-00-4, EDTA, processes
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (cleaning of **semiconductor** wafers after chemical-mech. polishing
 using solution containing)
 RN 60-00-4 HCAPLUS
 CN Glycine, N,N'-1,2-ethanediybis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



L114 ANSWER 63 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1996:178978 HCAPLUS

DN 124:235055

TI Pasty compositions for coating **semiconductor** devices

IN Dodo, Takashi; Tanabe, Yoshuki; Yamada, Junji

PA Hitachi Chemical Co Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07330950	A2	19951219	JP 1994-119429	19940601
	JP 3461031	B2	20031027		
PRAI	JP 1994-119429		19940601		

AB The title compns., showing low stress and good adhesion and heat and water resistance after curing, contain thermoplastics, silica, couplers, nonionic **surfactants**, and organic solvents. Silica, iso-Pr tris(cumylphenyl) titanate, and 2,4,7,9-tetramethyl-5-decyne-4,7-diol were kneaded with a varnish containing a polyamide-siloxane [prepared from 2,2-bis[4-(4-aminophenoxy)phenyl]propane, X 22-161AS, and isophthaloyl chloride] and diglyme to form a paste which was coated onto a Teflon surface, and cured 30 min at 70° and 60 min at 150° to give a 200-μm film showing linear expansion coefficient 0.8 + 10-5/°C and dynamic elastic modulus 250 kg/mm². A coating of the paste on glass showed adhesion 25.6 kg/cm² and no peeling during 500 thermal cycles (0.5 h at -40° and 0.5 h at +150°).

IC ICM C08K003-34

CC ICS C08K005-56; C08L079-08; H01L023-29; H01L023-31

42-10 (Coatings, Inks, and Related Products)

Section cross-reference(s): 76

ST **semiconductor** device coating polyamide siloxane paste; heat resistance polyamide siloxane coating **semiconductor**; water resistance polyamide siloxane coating **semiconductor**; silica filler polyamide siloxane paste coating; titanate coupler polyamide siloxane coating **semiconductor**; acetylene glycol **surfactant** polyamide siloxane coating; aminophenoxyphenylpropane polyamide siloxane coating **semiconductor**; isophthalic polyamide siloxane coating **semiconductor**

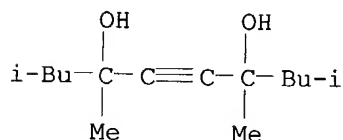
IT Heat-resistant materials

(polyamide-polyimide-siloxane coatings for **semiconductor** devices)

IT **Semiconductor** devices

(polyamide-polyimide-siloxane compns. for coating of)

- IT Coating materials
Electronic device packaging
(polyamide-polyimide-siloxane compns. for coating **semiconductor** devices)
- IT Siloxanes and Silicones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-, coatings; for **semiconductor** devices)
- IT Siloxanes and Silicones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-polyimide-, coatings; for **semiconductor** devices)
- IT Polyimides, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-siloxane-, coatings; for **semiconductor** devices)
- IT Polyamides, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyimide-siloxane-, coatings; for **semiconductor** devices)
- IT Polyamides, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(siloxane-, coatings; for **semiconductor** devices)
- IT 7429-90-5D, Aluminum, acetoalkoxy(diisopropoxy) 59989-96-7
RL: MOA (Modifier or additive use); USES (Uses)
(coupling agents; in silica-containing polyamide-siloxanes for coatings on **semiconductor** devices)
- IT 7631-86-9, Silicon dioxide, uses
RL: MOA (Modifier or additive use); USES (Uses)
(fillers; in polyamide-siloxanes for coatings on **semiconductor** devices)
- IT 99-63-8D, Isophthaloyl chloride, polyamide-siloxanes 1204-28-0D, Trimellitic anhydride chloride, polyamide-polyimide-siloxanes 13080-86-9D, 2,2-Bis[4-(4-aminophenoxy)phenyl]propane, polyamide-siloxanes
RL: TEM (Technical or engineered material use); USES (Uses)
(for coatings on **semiconductor** devices)
- IT 126-86-3, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol
RL: MOA (Modifier or additive use); USES (Uses)
(**surfactant**; in silica-containing polyamide-siloxanes for coatings on **semiconductor** devices)
- IT 126-86-3, 2,4,7,9-Tetramethyl-5-decyne-4,7-diol
RL: MOA (Modifier or additive use); USES (Uses)
(**surfactant**; in silica-containing polyamide-siloxanes for coatings on **semiconductor** devices)
- RN 126-86-3 HCAPLUS
- CN 5-Decyne-4,7-diol, 2,4,7,9-tetramethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



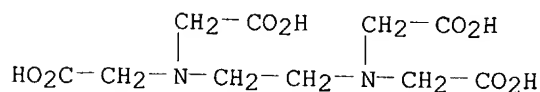
AN 1996:121222 HCAPLUS
 DN 124:153084
 TI Electroless bath for local metal deposits in holes and grooves to form electric wiring on **semiconductor** devices
 IN Endo, Masayuki; Kawaguchi, Akemi; Nishio, Mikio; Hashimoto, Shin
 PA Matsushita Electric Industrial Co., Ltd., Japan
 SO Eur. Pat. Appl., 22 pp.
 CODEN: EPXXDW

DT Patent
 LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 692554	A1	19960117	EP 1995-110948	19950712
	EP 692554	B1	19990120		
	R: DE, FR, GB				
	JP 08083796	A2	19960326	JP 1995-149873	19950616
	JP 3332668	B2	20021007		
	US 5645628	A	19970708	US 1995-502175	19950713
	US 5795828	A	19980818	US 1996-675667	19960703
PRAI	JP 1994-162030	A	19940714		
	US 1995-502175	A3	19950713		
AB	The electroless bath for deposition of elec. conductive metal (especially in holes and grooves on elec. insulating layer on a semiconductor substrate) contains metal ions, as well as a reducing agent, a complexing agent for the metal ions, and a pH-control addition with no metal in their chemical formulas. The bath is suitable for electroless deposition of Ag, Cu, Au, Ni, Co, or Pd using the resp. metal ions, with no alkali-metal and similar compds. to prevent substrate contamination. The reducing agents are selected from tartaric acid, nonmetal tartrate, saccharides, hydrazine, aldehyde, or polyol. The typical electroless bath for Ag as elec. conductive coating contains AgNO3 as the Ag-ion source, the reducing agent as tartaric acid, ethylenediamine for complexing of Ag ions, and tetramethylammonium hydroxide for pH control, optionally with a stabilizer and/or a surfactant . The Ag deposit from the bath is applied in holes and patterned grooves on elec. insulating layer, and the excess Ag on flat surface is removed by chemical etching or mech. polishing to leave the embedded Ag for elec.-circuit pattern on catalyzed substrate.				
IC	ICM C23C018-44				
	ICS C23C018-40; C23C018-34				
CC	56-6 (Nonferrous Metals and Alloys)				
	Section cross-reference(s): 76				
ST	electroless bath conductor metal deposition; semiconductor surface wiring electroless bath; silver conductor wiring electroless bath; gold conductor wiring electroless bath; copper conductor wiring electroless bath				
IT	Semiconductor devices (elec. conductor pattern on; electroless bath for conductor metal deposits in holes and grooves to form elec. wiring pattern on semiconductor devices)				
IT	Electric circuits (patterns; electroless bath with reducing agent for conductor metal deposits in elec. circuits)				
IT	Monosaccharides Polysaccharides, uses RL: MOA (Modifier or additive use); USES (Uses) (reducing agent; electroless bath with reducing agent for conductor metal deposits in elec. circuits)				

- IT Oligosaccharides
RL: MOA (Modifier or additive use); USES (Uses)
(di-, reducing agent; electroless bath with reducing agent for conductor metal deposits in elec. circuits)
- IT 7440-33-7, Tungsten, processes 12618-06-3 25583-20-4, Titanium nitride
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(barrier layer; electroless bath for conductor metal deposits in holes and grooves for elec. circuit pattern on catalyzed substrates)
- IT 7440-32-6, Titanium, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyzing film; electroless bath for conductor metal deposits in holes and grooves for elec. circuit pattern on catalyzed substrates)
- IT 50-21-5, Lactic acid, uses 60-00-4, EDTA, uses
RL: MOA (Modifier or additive use); USES (Uses)
(complexing agent; electroless bath for conductor metal deposits in holes and grooves for elec. circuit pattern on catalyzed substrates)
- IT 102-71-6, Triethanolamine, uses 107-15-3, Ethylenediamine, uses
RL: MOA (Modifier or additive use); USES (Uses)
(complexing agent; electroless bath with reducing agent for conductor metal deposits in elec. circuits)
- IT 7440-02-0, Nickel, processes 7440-05-3, Palladium, processes 7440-22-4, Silver, processes 7440-48-4, Cobalt, processes 7440-50-8, Copper, processes 7440-57-5, Gold, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(elec. conductor deposition; electroless bath for conductor metal deposits in holes and grooves for elec. wiring pattern on semiconductor devices)
- IT 7761-88-8, Silver nitrate, uses
RL: MOA (Modifier or additive use); USES (Uses)
(electroless bath with; electroless bath with reducing agent for conductor metal deposits in elec. circuits)
- IT 79-09-4, Propionic acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(pH-buffer agent; electroless bath for conductor metal deposits in holes and grooves for elec. circuit pattern on catalyzed substrates)
- IT 75-59-2, Tetramethylammonium hydroxide 1336-21-6, Ammonium hydroxide 7697-37-2, Nitric acid, uses 10043-35-3, Boric acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(pH-control agent; electroless bath with reducing agent for conductor metal deposits in elec. circuits)
- IT 50-00-0, Formaldehyde, uses
RL: MOA (Modifier or additive use); USES (Uses)
(reducing agent; electroless bath for conductor metal deposits in holes and grooves for elec. circuit pattern on catalyzed substrates)
- IT 87-69-4, Tartaric acid, uses 302-01-2, Hydrazine, uses 6303-21-5, Hypophosphorous acid
RL: MOA (Modifier or additive use); USES (Uses)
(reducing agent; electroless bath with reducing agent for conductor metal deposits in elec. circuits)
- IT 60-00-4, EDTA, uses
RL: MOA (Modifier or additive use); USES (Uses)
(complexing agent; electroless bath for conductor metal deposits in holes and grooves for elec. circuit pattern on catalyzed substrates)
- RN 60-00-4 HCAPLUS
CN Glycine, N,N'-1,2-ethanediyldis[N-(carboxymethyl)- (9CI) (CA INDEX NAME)



L114 ANSWER 65 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1993:605511 HCAPLUS

DN 119:205511

TI **Planarizing** compositions and process

IN Matsumura, Kosaburo; Akashi, Mitsumasa; Tsutsumi, Yoshitaka; Hasegawa, Masazumi

PA Tosoh Corp., Japan

SO Ger. Offen., 37 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4223310	A1	19930121	DE 1992-4223310	19920715
	JP 05202228	A2	19930810	JP 1992-204341	19920709
	US 5677380	A	19971014	US 1995-408885	19950324
PRAI	JP 1991-199878		19910716		
	JP 1991-337977		19911128		
	US 1992-913614		19920716		
OS	MARPAT 119:205511				
AB	The title process, useful in the production of charge-coupled apparatus, liquid-crystalline displays (no data), and integrated semiconductor circuits, uses resins with planarization temperature <200° and thermal curing agents (melamine or epoxy resins). A solution of 25 g acrylic acid-Bu acrylate-Me methacrylate copolymer (mol. weight 15,000, glass temperature 53°), 4.5 g hexakis(methoxymethyl)melamine, and 75 g diglyme was spin-coated (2.0 μm) on ion-etched, SiO ₂ -coated Si and cured at 150° for 10 min to give a planarizing film showing no detectable irregularities.				
IC	ICM C09D133-00				
	ICS C09D163-00; C09D161-28; C09D007-12				
ICA	G09F009-35; H01L021-314; G02F001-1333; G03F007-09				
ICI	C09D133-00, C09D133-02, C09D133-06, C09D133-14; C08L033-14, C08L061-28, C08L063-00				
CC	42-2 (Coatings, Inks, and Related Products)				
	Section cross-reference(s): 76				
ST	spin coating compn planarizing ; acrylic polymer planarizing coating; melamine resin planarizing coating; integrated circuit coating planarization temp; liq crystal display planarizing				
IT	Coating materials				
	(thermosetting, for planarization of electronic apparatus)				
IT	Phenolic resins, uses				
	RL: USES (Uses)				
	(epoxy, spin-coating compns., for planarization)				
IT	Electric circuits				
	(integrated, spin-coating compns. for planarization of)				
IT	Epoxy resins, uses				
	RL: USES (Uses)				
	(phenolic, spin-coating compns., for planarization)				

IT 29382-10-3 114731-56-5 150303-33-6 150303-34-7 150303-35-8
 150303-36-9 150373-20-9 150373-21-0
 150373-22-1 150373-23-2 150373-24-3
 150373-25-4 150373-26-5 150528-49-7
 150652-07-6

RL: USES (Uses)
 (spin-coating compns., for planarization)

IT 150373-20-9 150373-21-0 150373-22-1
 150373-23-2 150373-24-3 150373-25-4
 150373-26-5 150652-07-6

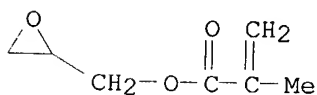
RL: USES (Uses)
 (spin-coating compns., for planarization)

RN 150373-20-9 HCAPLUS

CN D-Glucitol, tetrakis-O-(oxiranylmethyl)-, polymer with methyl
 2-methyl-2-propenoate and oxiranylmethyl 2-methyl-2-propenoate (9CI) (CA
 INDEX NAME)

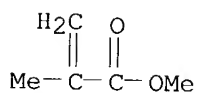
CM 1

CRN 106-91-2
 CMF C7 H10 O3



CM 2

CRN 80-62-6
 CMF C5 H8 O2

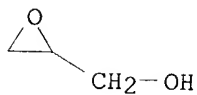


CM 3

CRN 64055-71-6
 CMF C18 H30 O10
 CCI IDS

CM 4

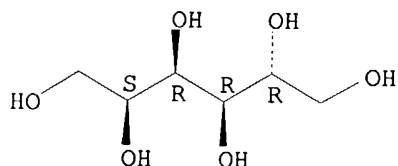
CRN 556-52-5
 CMF C3 H6 O2



CM 5

CRN 50-70-4
CMF C6 H14 O6

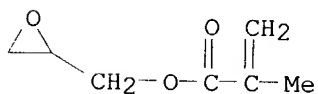
Absolute stereochemistry.



RN 150373-21-0 HCAPLUS
CN D-Glucitol, tetrakis-O-(oxiranylmethyl)-, polymer with butyl 2-methyl-2-propenoate and oxiranylmethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

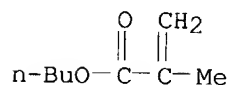
CM 1

CRN 106-91-2
CMF C7 H10 O3



CM 2

CRN 97-88-1
CMF C8 H14 O2

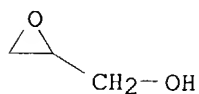


CM 3

CRN 64055-71-6
CMF C18 H30 O10
CCI IDS

CM 4

CRN 556-52-5
CMF C3 H6 O2

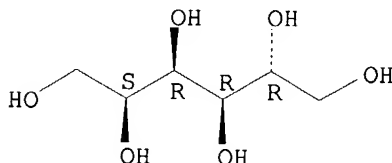


CM 5

CRN 50-70-4

CMF C6 H14 O6

Absolute stereochemistry.



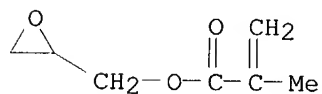
RN 150373-22-1 HCAPLUS

CN D-Glucitol, tetrakis-O-(oxiranylmethyl)-, polymer with oxiranylmethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 106-91-2

CMF C7 H10 O3



CM 2

CRN 64055-71-6

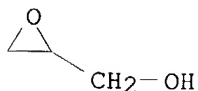
CMF C18 H30 O10

CCI IDS

CM 3

CRN 556-52-5

CMF C3 H6 O2

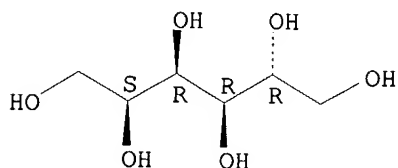


CM 4

CRN 50-70-4

CMF C6 H14 O6

Absolute stereochemistry.



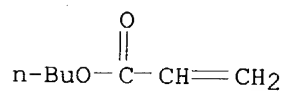
RN 150373-23-2 HCAPLUS

CN D-Glucitol, tetrakis-O-(oxiranylmethyl)-, polymer with butyl 2-propenoate, methyl 2-methyl-2-propenoate and 2-methyl-2-propenoic acid (9CI) (CA INDEX NAME)

CM 1

CRN 141-32-2

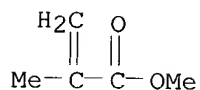
CMF C7 H12 O2



CM 2

CRN 80-62-6

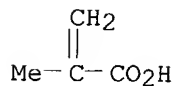
CMF C5 H8 O2



CM 3

CRN 79-41-4

CMF C4 H6 O2



CM 4

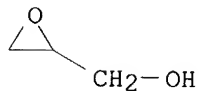
CRN 64055-71-6

CMF C18 H30 O10

CCI IDS

CM 5

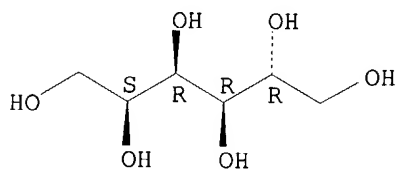
CRN 556-52-5
CMF C3 H6 O2



CM 6

CRN 50-70-4
CMF C6 H14 O6

Absolute stereochemistry.

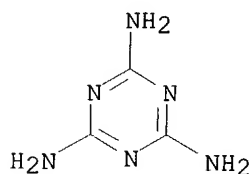


RN 150373-24-3 HCAPLUS

CN D-Glucitol, tetrakis-O-(oxiranylmethyl)-, polymer with butyl 2-methyl-2-propenoate, formaldehyde, oxiranylmethyl 2-methyl-2-propenoate and 1,3,5-triazine-2,4,6-triamine (9CI) (CA INDEX NAME)

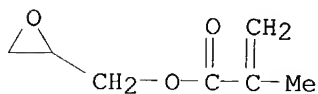
CM 1

CRN 108-78-1
CMF C3 H6 N6



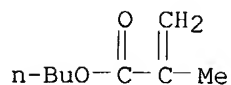
CM 2

CRN 106-91-2
CMF C7 H10 O3



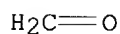
CM 3

CRN 97-88-1
CMF C8 H14 O2



CM 4

CRN 50-00-0
CMF C H2 O

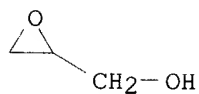


CM 5

CRN 64055-71-6
CMF C18 H30 O10
CCI IDS

CM 6

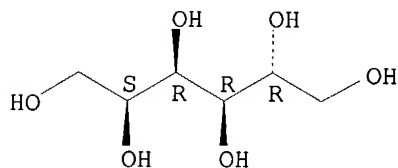
CRN 556-52-5
CMF C3 H6 O2



CM 7

CRN 50-70-4
CMF C6 H14 O6

Absolute stereochemistry.



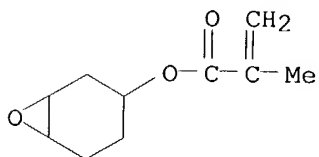
RN 150373-25-4 HCAPLUS
CN D-Glucitol, tetrakis-O-(oxiranylmethyl)-, polymer with butyl
2-methyl-2-propenoate, formaldehyde, 7-oxabicyclo[4.1.0]hept-3-yl
2-methyl-2-propenoate and 1,3,5-triazine-2,4,6-triamine (9CI) (CA INDEX

NAME)

CM 1

CRN 125566-99-6

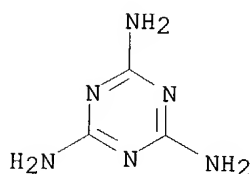
CMF C10 H14 O3



CM 2

CRN 108-78-1

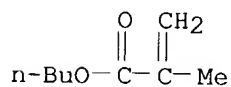
CMF C3 H6 N6



CM 3

CRN 97-88-1

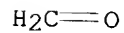
CMF C8 H14 O2



CM 4

CRN 50-00-0

CMF C H2 O



CM 5

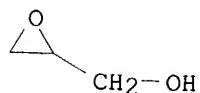
CRN 64055-71-6

CMF C18 H30 O10

CCI IDS

CM 6

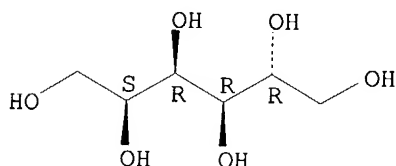
CRN 556-52-5
CMF C3 H6 O2



CM 7

CRN 50-70-4
CMF C6 H14 O6

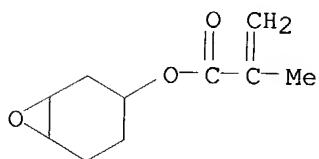
Absolute stereochemistry.



RN 150373-26-5 HCAPLUS
CN D-Glucitol, tetrakis-O-(oxiranylmethyl)-, polymer with butyl
2-methyl-2-propenoate and 7-oxabicyclo[4.1.0]hept-3-yl
2-methyl-2-propenoate (9CI) (CA INDEX NAME)

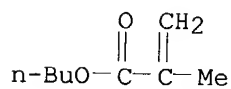
CM 1

CRN 125566-99-6
CMF C10 H14 O3



CM 2

CRN 97-88-1
CMF C8 H14 O2

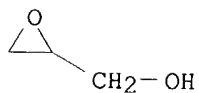


CM 3

CRN 64055-71-6
CMF C18 H30 O10
CCI IDS

CM 4

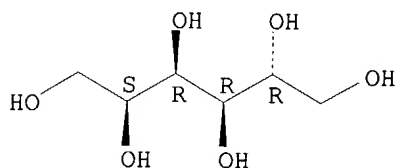
CRN 556-52-5
CMF C3 H6 O2



CM 5

CRN 50-70-4
CMF C6 H14 O6

Absolute stereochemistry.



RN 150652-07-6 HCAPLUS
CN D-Glucitol, tetrakis-O-(oxiranylmethyl)-, polymer with EOCN 1028,
formaldehyde and 1,3,5-triazine-2,4,6-triamine (9CI) (CA INDEX NAME)

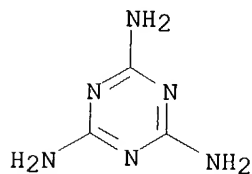
CM 1

CRN 150385-47-0
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

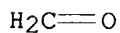
CM 2

CRN 108-78-1
CMF C3 H6 N6



CM 3

CRN 50-00-0
CMF C H2 O

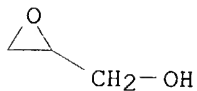


CM 4

CRN 64055-71-6
CMF C18 H30 O10
CCI IDS

CM 5

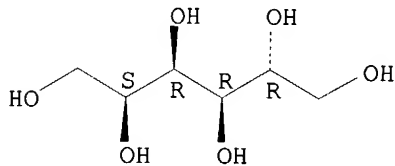
CRN 556-52-5
CMF C3 H6 O2



CM 6

CRN 50-70-4
CMF C6 H14 O6

Absolute stereochemistry.



L114 ANSWER 66 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1992:243752 HCAPLUS
DN 116:243752
TI Two bis(thiolethionedithiolato)nickelate (1-) compounds with a divalent closed-shell cation: synthesis, crystal structure, and electrical conductivity of $[\text{Me}_3\text{N}(\text{CH}_2)_4\text{NMe}_3][\text{Ni}(\text{dmit})_2] \cdot 5 \cdot 2\text{dmf}$ and $[\text{Me}_3\text{N}(\text{CH}_2)_4\text{NMe}_3][\text{Ni}(\text{dmit})_2] \cdot 5 \cdot \text{CH}_3\text{CN}$
AU Cornelissen, Joost P.; Muller, Edgar; Vaassens, Peter H. S.; Haasnoot, Jaap G.; Reedijk, Jan; Cassoux, Patrick
CS Dep. Chem., Leiden Univ., Leiden, 2300 RA, Neth.
SO Inorganic Chemistry (1992), 31(11), 2241-8
CODEN: INOCAJ; ISSN: 0020-1669
DT Journal

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

LA English

AB Electrochem. oxidation of a solution of [Me₃N(CH₂)₄NMe₃][Ni(dmit)₂]₂ (H₂dmit = 4,5-dimercapto-1,3-dithiole-2-thione) yields crystals of [Me₃N(CH₂)₄NMe₃][Ni(dmit)₂]₅·2DMF (1) or [Me₃N(CH₂)₄NMe₃][Ni(dmit)₂]₅·2CH₃CN (2), depending on the exact oxidation conditions. 1 Crystallizes in triclinic space group, P.hivin.1, a 11.020(2), b 11.320(3), c 19.900(4) Å, α 93.50(2), β 104.96(2), γ 110.01(2)°, Z = 1, R = 0.0454. 2 Crystallizes in triclinic space group P1, a 12.939(3), b 20.379(8), c 8.807(2) Å, α 102.07(3), β 103.17(2), γ 74.04(2)°, Z = 1, R = 0.037. In both compds. several of the Ni(dmit)₂ units show considerable deviation from **planarity**. The packing motif of the acceptor mols. is essentially similar in 1 and 2. Stacks of Ni(dmit)₂ monomers, dimers, and trimers form conduction sheets which are separated from each other by the dications and the solvent mols. Short intermol. S···S contacts build a two-dimensional network in the lattice of 1 and 2. Conductivity measurements indicate a room temperature value of 0.1-1 S cm⁻¹. Both compds. behave as **semiconductors** with E_a = 0.2 eV, as evident from conductivity analyses made at lower temperature

CC 72-4 (Electrochemistry)
Section cross-reference(s): 75, 76

ST crystal structure nickelate dimercaptodithiolethionato complex; elec cond nickelate dimercaptodithiolethionato complex; dithiolethionedithiolato nickel complex; mercaptodithiolethione nickelate

IT Crystal structure
Electric conductivity and conduction
Molecular structure
(of nickelate dimercaptodithiolethionato complex salt with bis(trimethylammonio)butane)

IT 141088-86-0
RL: PRP (Properties)
(electrochem. preparation and crystal and elec. conductivity of)

IT 141088-87-1
RL: PRP (Properties)
(electrochem. preparation and crystal and elec. conductivity of)

IT 141088-85-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and electrochem. oxidation of)

IT **13440-13-6P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reaction of, with bis(dithiolethionedithiolato)nickelate)

IT 68401-88-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with bis(trimethylammonio)butane)

IT 75-50-3, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with dibromobutane)

IT 110-52-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with trimethylamine)

IT **13440-13-6P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reaction of, with bis(dithiolethionedithiolato)nickelate)

RN 13440-13-6 HCAPLUS

CN 1,4-Butanediaminium, N,N,N,N',N',N'-hexamethyl-, dibromide (9CI) (CA

INDEX NAME)

 $\text{Me}_3^+\text{N}-(\text{CH}_2)_4-\text{N}^+\text{Me}_3$ ● 2 Br⁻

L114 ANSWER 67 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1990:14297 HCAPLUS

DN 112:14297

TI Patterning by using **surfactant** in novolak-naphthoquinonazide photoresist

IN Kamata, Yutaka

PA Toshiba Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01179322	A2	19890717	JP 1988-208	19880104
PRAI	JP 1988-208		19880104		

AB In patterning by using a photoresist from a novolak resin, a naphthoquinonazide compound, and a solvent, a **surfactant** is absorbed onto the developed resist surface then the resist is baked. The method gives a dimensionally accurate precise pattern after active ion etching. Thus, a film was formed by sputtering of Si-containing Al on SiO₂-coated Si substrate, coated with a photoresist from OFPR 800 then prebaked, irradiated, developed, **washed**, sprayed with a solution of Me₂CHCH₂CMe[(OCH₂CH₂)mOH]C.tplbond.CCMe[(OCH₂CH₂)nOH]CH₂CHCMe₂, **washed**, dried, baked, Cl-based gas active ion-etched, and O-ashed to give a dimensionally accurate precise pattern.

IC ICM H01L021-30
ICS G03C005-00; G03F007-00; H01L021-302

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST patterning photoresist **surfactant** dimensional accuracy; novolak naphthoquinonediazide photoresist baking **surfactant**; polyoxyalkylene **surfactant** patterning photoresist **semiconductor**

IT **Surfactants**
(for baking of novolak-naphthoquinoazide photoresist, for dimensionally accurate patterning, for **semiconductor** device)

IT **Semiconductor** devices
(photoresist for, novolak and naphthoquinonediazide as, **surfactant** in baking of)

IT Polyoxyalkylenes, uses and miscellaneous
RL: USES (Uses)
(**surfactant**, for baking of novolak-naphthoquinoazide photoresist, for dimensionally accurate patterning)

IT Phenolic resins, uses and miscellaneous
RL: USES (Uses)
(novolak, photoresist from, baking of, **surfactant** in, with

dimensional accuracy, for **semiconductor** device)

IT Resists
(photo-, novolak and naphthoquinonediazide for, baking of, **surfactant** in, with dimensional accuracy)

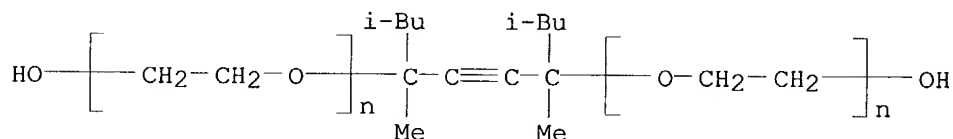
IT 81458-41-5, OFPR 800
RL: USES (Uses)
(photoresist from, baking of, **surfactant** in, with dimensional accuracy, for **semiconductor** device)

IT 9014-85-1
RL: USES (Uses)
(**surfactant**, for baking of novolak-naphthoquinoazide photoresist, for dimensionally accurate patterning)

IT 9014-85-1
RL: USES (Uses)
(**surfactant**, for baking of novolak-naphthoquinoazide photoresist, for dimensionally accurate patterning)

RN 9014-85-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α, α' -[1,4-dimethyl-1,4-bis(2-methylpropyl)-2-butyne-1,4-diyl]bis[ω -hydroxy- (9CI) (CA INDEX NAME)



L114 ANSWER 68 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1988:213978 HCAPLUS

DN 108:213978

TI Positive-working photoresist elements containing antireflective butadienyl dyes which are thermally stable at high temperatures

IN Blevins, Richard W.; Daly, Robert C.

PA Eastman Kodak Co., USA

SO U.S., 7 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4719166	A	19880112	US 1986-890220	19860729
	EP 263921	A2	19880420	EP 1987-109668	19870705
	EP 263921	A3	19880720		
	R: DE, FR, GB, NL				
	JP 63041844	A2	19880223	JP 1987-185636	19870727
PRAI	US 1986-890220		19860729		

OS MARPAT 108:213978

AB The pos. working photoresist elements are protected against reflection of radiation from the substrate by incorporating, in the photoresist layer or an antireflection layer or a **planarizing** layer, certain butadienyl dyes $\text{R}_2[\text{N}(\text{R}_1)\text{CH}:\text{CH}:\text{C}(\text{X})\text{CN}]_2$ [R_1 = (cyclo)alkyl, aryl; R_2 = arylene, alkylene, arylenealkylene with or without being interrupted with ≥ 1 O atom or NR_3 group; the sum of C atoms in R_1 and R_2 is ≥ 13 ; R_3 = alkyl; X = an electron withdrawing group]. The dyes have superior resistance to thermal degradation or volatilization at

$\geq 200^\circ$. The dyes also have good solubility in solvents commonly used in the **semiconductor** industry. Thus, a photoresist was prepared with the antireflection layer containing

(CH₂)₆[N(C₄H₉)CH:CHCH:C(CN)₂]₂

and hard baked at 200° for 30 min. The photoresist had dye d. loss of only 1% due to baking.

IC ICM G03C001-60

ICS G03C001-84

NCL 430166000

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST photoresist antireflective layer butadienyl dye; thermal stability photoresist dye

IT Resists

(photo-, antireflective butadienyl dye for)

IT 114478-17-0 114478-18-1 114478-19-2

RL: USES (Uses)

(antireflective dye, in photoresist)

IT 52718-96-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation and reaction of, butadienyl dye from)

IT 104600-90-0P 114478-16-9P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation and use of, as antireflective dye in photoresist)

IT 109-74-0 109-77-3, Malononitrile 4835-11-4 17576-35-1, 1,3,3-Trimethoxypropene

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of, butadienyl dye from)

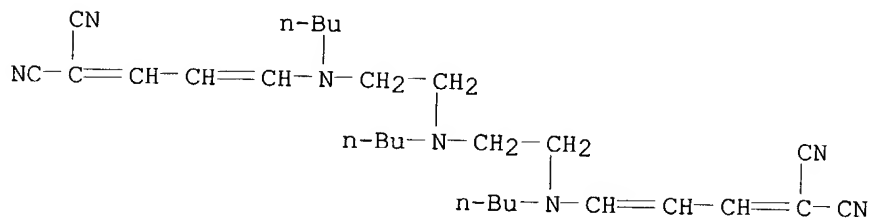
IT 114478-17-0 114478-18-1 114478-19-2

RL: USES (Uses)

(antireflective dye, in photoresist)

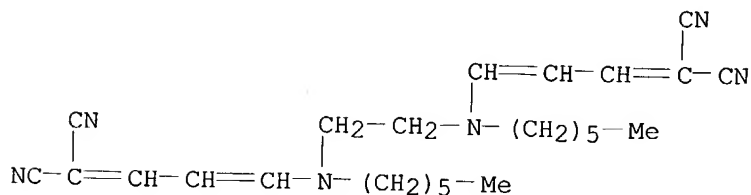
RN 114478-17-0 HCAPLUS

CN Propanedinitrile, 2,2'-[(butylimino)bis[2,1-ethanediyl(butylimino)-2-propen-3-yl-1-ylidene]]bis- (9CI) (CA INDEX NAME)



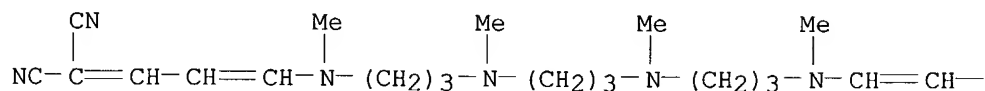
RN 114478-18-1 HCAPLUS

CN Propanedinitrile, 2,2'-[1,2-ethanediylbis[(hexylimino)-2-propen-3-yl-1-ylidene]]bis- (9CI) (CA INDEX NAME)

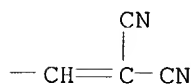


RN 114478-19-2 HCAPLUS
 CN 5,9,13,17-Tetraazaheneicosa-1,3,18,20-tetraene-1,1,21,21-tetracarbonitrile, 5,9,13,17-tetramethyl- (9CI) (CA INDEX NAME)

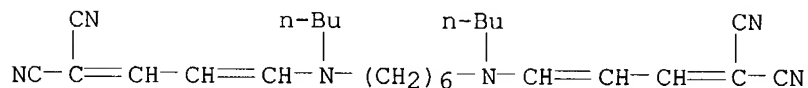
PAGE 1-A



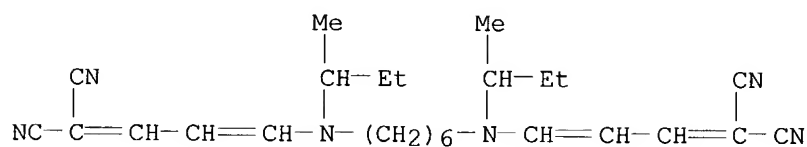
PAGE 1-B



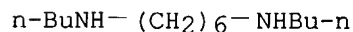
IT 104600-90-0P 114478-16-9P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation and use of, as antireflective dye in photoresist)
 RN 104600-90-0 HCAPLUS
 CN Propanedinitrile, 2,2'-[1,6-hexanediylbis[(butylimino)-2-propen-3-yl-1-ylidene]]bis- (9CI) (CA INDEX NAME)



RN 114478-16-9 HCAPLUS
 CN Propanedinitrile, 2,2'-[1,6-hexanediylbis[[1-methylpropyl)imino]-2-propen-3-yl-1-ylidene]]bis- (9CI) (CA INDEX NAME)



IT 4835-11-4
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, butadienyl dye from)
 RN 4835-11-4 HCAPLUS
 CN 1,6-Hexanediamine, N,N'-dibutyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L114 ANSWER 69 OF 69 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1985:229480 HCAPLUS
 DN 102:229480

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

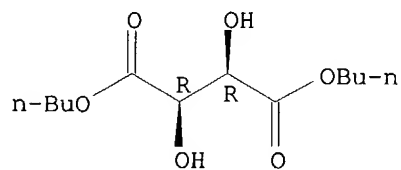
TI Positive type photosensitive resin composition
 PA Japan Synthetic Rubber Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 60024545	A2	19850207	JP 1983-133108	19830721
	JP 03022618	B4	19910327		
PRAI	JP 1983-133108		19830721		
AB	Photosensitive composition consists of alkali-soluble novolak-type resin and 1,2-quinoneazide compound dissolved in a solvent mixture composed of low-boiling (60-170°) solvent and high-boiling (180-350°) solvent, in the ratio ranging from 50:50 to 99:1. The use of the solvent mixture prevents the so-called striation in the spin-coating process of the composition i.e. the formation of a striated uneven surface. Thus, a novolak-type resin was prepared by heating a mixture of m-cresol 75 g, p-cresol 25, 37% HCHO 66 mL, and oxalic acid 40 mg at 100° with stirring. H2O was removed in vacuum at 130°. The resultant resin 4.3 and 2,3,4-trihydroxybenzophenone-1,2-naphthoquinonediazido-5-sulfonic acid triester 0.7 g were dissolved in Et cellosolve (b.p. 156.3°) 12 and benzyl acetate (b.p. 213.5°) 3 g and filtered to obtain a composition A Si wafer having an oxide layer was spin-coated with the composition and prebaked at 100° for 10 min. Measured striation was 20 Å in average which was not changed after development with Me4NOH and rinsing with H2O.				
IC	ICM G03C001-72				
	ICS G03F007-08				
CC	74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes) Section cross-reference(s): 76				
ST	photoresist solvent mixt striation prevention; pattern formation wafer striation prevention				
IT	Semiconductor devices				
	(photoresist compns. for preparation of)				
IT	Resists				
	(photo-, novolak-naphthaquinone diazide-type, solvent composition for, for prevention of striation during spin-coating)				
IT	9003-35-4				
	RL: USES (Uses)				
	(solvent composition for photoresist material containing, for prevention of striation during spin-coating process)				
IT	78-59-1 87-92-3 93-89-0 100-51-6, uses and miscellaneous 108-32-7 110-80-5 112-07-2 112-34-5 124-07-2, uses and miscellaneous 131-11-3 140-11-4 141-05-9				
	RL: USES (Uses)				
	(solvent mixture containing, for photoresist composition for prevention of striation during spin-coating)				
IT	87-92-3				
	RL: USES (Uses)				
	(solvent mixture containing, for photoresist composition for prevention of striation during spin-coating)				
RN	87-92-3 HCAPLUS				
CN	Butanedioic acid, 2,3-dihydroxy- (2R,3R)-, dibutyl ester (9CI) (CA INDEX NAME)				

Absolute stereochemistry.



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